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CLEVELAND, OCTOBER 31, 1918

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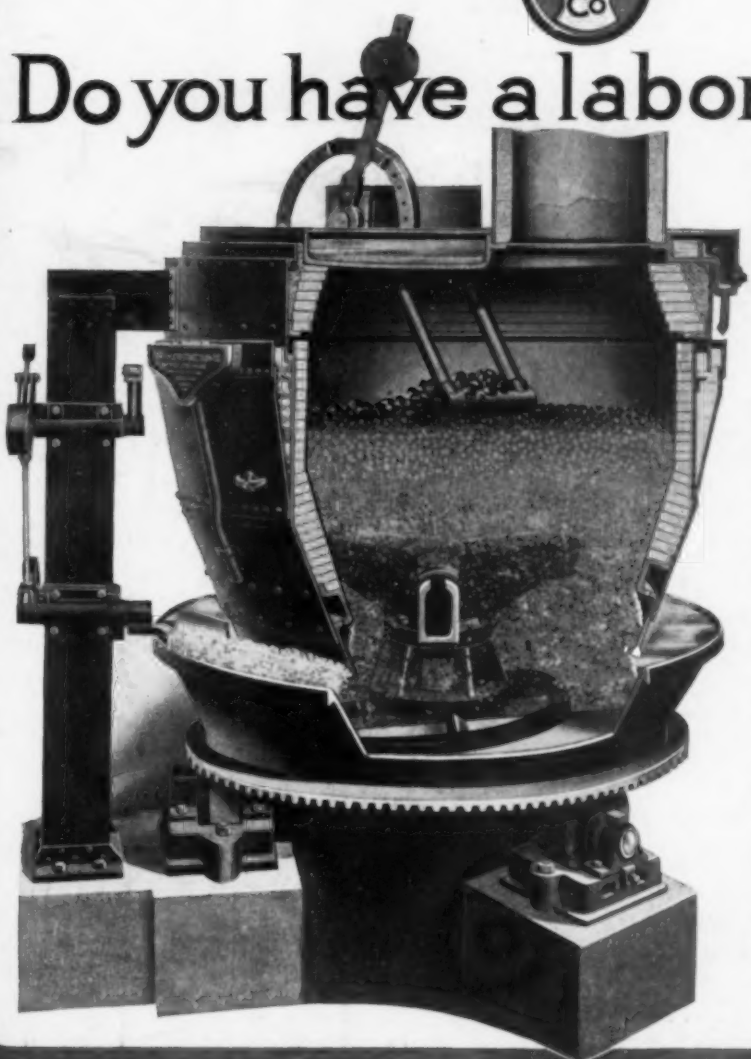

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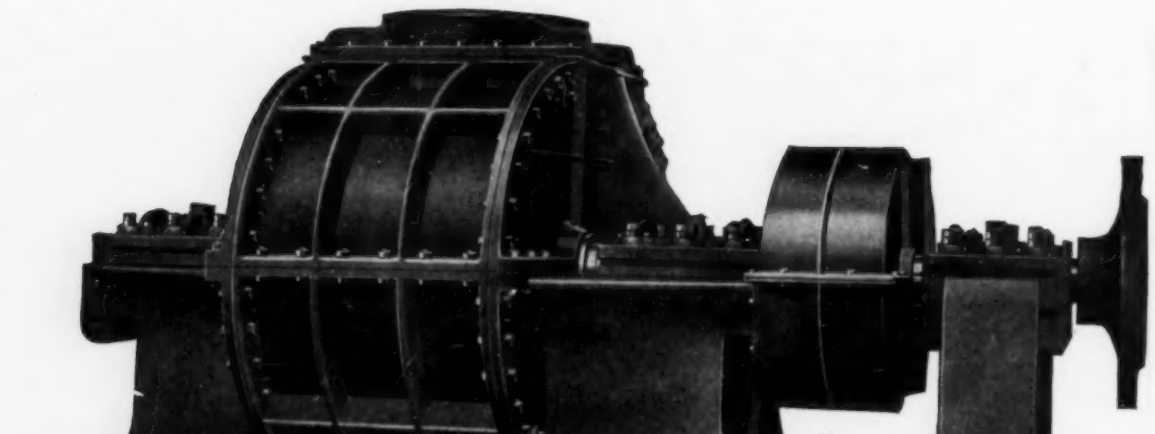
"CONNERSVILLE"



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CONNERSVILLE, IND.

NEW YORK
114 Liberty Street

THE IRON TRADE REVIEW

Vol. LXIII Cleveland, October 31, 1918 *No. 18*

War Work Still Absorbs Industry

Progress of Peace Possibilities Closely Followed But Trade Effects, Apart from Ship Program, Not Apparent—Emergency Fleet Curtails Extension Plans and Cancels Large Orders for Equipment—Alameda Yard Stopped

WHEREVER the continuing peace movements may lead, war is still the uppermost and immediate interest of the iron and steel industry. Nothing so clearly demonstrates this situation as the tremendous rate of present production which, despite the rage of influenza, has never been greater in October for many plants, and the large new orders being placed for battlefield requirements. The march to Berlin is to be immeasurably facilitated by the American rails, cars and locomotives that are to serve the advancing armies. For General Pershing's forces, the huge total of 380,000 tons of 80-pound rails for early delivery has just been distributed among the mills, along with the closing of 40,000 additional cars and several hundred locomotives. No such orders of size have been put before the producers at one time during the present hostilities. Tank construction has reached a new stage of production and many thousand additional have been placed. A new allotment of army trucks is expected to call for 20,000. The allies continue large buyers of war material. Italy has placed 90,000 tons of shell steel additional and has asked for 100,000 tons more of pig iron. Great Britain within the week has sought permission of the United States government to place additional tonnages of shell steel in this country. France has placed important new orders.

Ship Work Cancelled

Peace with its inevitable adjustments continues to stir much thought along trade lines. So long as the government absorbs practically the full output of the industry for war and essential purposes as it is now doing, this interest promises to be largely of a speculative character. The most concrete evidence of governmental retrenchment is presented by developments connected with the shipping program. New yard and accessory plant projects both in the east and the west, have been held up indefinitely. Cancellations of equipment for these plants estimated at $8,000,000 to $10,000,000 have been made by the Emergency Fleet corporation. The most striking example is the abandonment of work on the new Alameda, Cal., yards of the Bethlehem Steel Corp. It is reported that new ship contracts are to be placed very sparingly, if at all, from this time forth.

Output is Still High

It is becoming more apparent that iron and steel production has not been as much affected by the influenza as at first seemed probable. While many men have been out, there have been few breaks in operations. The east has been the hardest hit. Among the plants most affected have been the plate mills which, after having been up to 95 per cent two weeks ago, dropped to 40 per cent and now are recovering to 60 and 70 per cent. West of Pittsburgh the mills and furnaces have been making splendid records. The indications are that the tonnage of the leading interest in the Chicago district will be the largest of any October in history. A roundabout effect of the epidemic is the decline in coke output, due to the lack of cars arising from a shortage among crews. The coke problem has received renewed recognition at Washington and that branch of the fuel administration has concentrated its energies upon production.

Pig Iron is Active

Heavy allocations of pig iron for next year are going on steadily. A little less than 100,000 tons for that delivery was placed in the week. Included was 45,000 tons of basic for the St. Louis district. Requests now up for action are the most numerous for any single week. The total allocations since May 1 now reach the impressive amount of 1,477,000 tons. Peace talk has had diverse effect upon the market. In some districts it has led to a more liberal disposition both to buy and to sell.

OCTOBER 31, 1918

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

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Pernicious Peace Talk

CHAIRMAN Bernard M. Baruch of the war industries board gave timely and sound advice last week in warning the people of the country against allowing peace talk to interrupt industrial pursuits necessary to the war program. There can be no doubt that one purpose of the peace offensive of Germany is to bring about the relaxation of the industrial efforts of the United States and the allies. Likewise, there can be no doubt that there are German agents in this country posing as good Americans, who are trying to spread peace talk to weaken our arm in this hour when, of all times, we must strike as hard as we can with the implements of war at our command. The only time to talk peace will be after Germany has surrendered unconditionally.

Mr. Baruch, after saying that the matter of peace may be left to the President, points out that peace talk is affecting our output and making difficult the diversion of labor from nonwar to war industries. This is a disturbing statement, but is easily believable. Employers of labor in steel mills and all other war industries must combat vigorously the effect of this peace talk, and be on their guard eternally against it. Laborers who can be shifted from nonwar to war work must be made to realize their duty to turn to essential production. Loose talk of peace at this time not only is highly mischievous but it readily can attain such magnitude, because of the psychological elements associated with it, as to create a danger that in proportion would be equal to a big military reverse. The best answer to peace talk is to speed up production.

War's Discipline in Peace

CITED for the Military Cross and standing before the officer who was to confer the honor, a British corporal, erstwhile clerk in a London tea shop, spoke the gist of true discipline. This non-com, when left with a score of men, all the ranking officers having fallen, took command, rallied his little band and drove a pestilent Hun machine gun crew to surrender. His act opened the way for a substantial gain, and established a firmly anchored foothold on a vital stream crossing. As he stood with five others before his regiment on parade, the corporal was asked how he ventured to assume leadership. "That's what the leftenant would 'ave told me to do, 'ad 'e been there, sir," was his reply.

That instant and implicit obedience to the spoken or implied command, indeed constitutes a measure of perfect discipline. This spirit is not gained by inflexible iron rule enforced by penal force. Neither is it induced by a weak pampering fed with flattery. Respect for authority is the firm basis upon which must be built, day by day, such a mental condition that an emergency finds in the disciplined mind, a response which is in effect a physical reflex.

American troops have evidenced good discipline. Successes attained, as well as the commendatory statements of allied officers attest this fact. But with all the reiteration of the truism that our great industrial army is in effect a fighting force, discipline here is sadly lacking.

The one great force which has been the backing for our previous false industrial discipline has been the power of "firing." Labor shortage has pulled the teeth of this form of coercion and it will indeed be fortunate if it never again may be effective. Training, and real discipline will accomplish much more for the ultimate good of both employe and employer, than will this pernicious practice of shifting men from plant to plant and adding to the labor turnover.

Equally objectionable is the practice of flattery, carried to extreme in some cases in the shipyards. Here the opulent employe is begged to do his part, is pampered in his power to block the whole job should he so desire by refusing to work, and constantly is reminded that he cannot be dropped from the payroll, as the need for his services is too

great. Results accomplished in the shipyard reflect great credit on the majority of workmen, it is true; but employment managers, visitors and even workmen themselves cite cases without end where shirkers and loafers mock at all discipline and waste the government's time.

Peace will serve to remove the false standards which now exist. Workmen will encounter different conditions, and employers, too, will have to readjust their viewpoint. When the dominating force of war is removed, if some new cohesive element is not effected which will serve to cement the interests of manufacturer and workman, labor discord and strife threaten to remove largely any industrial advantage which the conflict has brought to America. Men of broad vision in the iron and steel field have stated that this cementing element may be supplied by those who have experienced army discipline. These men when reabsorbed into industry will bring with them an element of respect for authority, an understanding of the "other fellow's" viewpoint, and a sound judgment of life's values, which will do much to instill discipline into industrial life.

Both employer and employe are largely represented in the army. Under discipline which leaves its mark upon all, they will come to a viewpoint which cannot fail to have a beneficial effect in after-the-war adjustments.

No Time for Partisanship

ADJOURNING politics has proved to be an experiment which suited the American people but not the politicians. Some of the country's best men, the brainiest leaders, have striven for months to avoid the raising of the issues which today rank highest in the congressional campaigns. The collapse of their work is regrettable. The blame for the collapse, unfortunately, can not well be placed without opening the way to partisan argument.

Elihu Root was one of the men who, a strong party man by training, became nonpartisan in action. Support from all parties was enlisted and in many cases secured for what seemed then the essential need of electing aggressive Americans to congress. The President declared politics adjourned and pointed out that congressmen would have to stand before the voters of their districts on the sole record of accomplishment.

Now we are told suddenly that the acid test of fitness for congress is not accomplishment but party fidelity. The only answer to this last-hour right about face is politics. The country as a whole regrets that the President has loaned the prestige of his high position to such a purpose. The prompt response by his opponents—in politics but not in patriotism—was inevitable. Americans everywhere would have been better satisfied if their new congress had been chosen on a broad basis of Americanism rather than, as seems now inevitable, on the narrow basis of party affiliation.

There is no politics or party distinction among the men who are winning the war in the mills and workshops of the country, either as directing minds or as employes. There should be as little place for politics in the higher management of the war. From its character, war demands efficiency in the highest degree. Politics, by constant practical demonstration, means anything but efficiency. The more we have of the latter, it is pretty certain that the less we are bound to have of the former, whether it be war or plain everyday business.

Packing Machinery for Export

PACKING of machine tools for export now is a much more thorough and painstaking job than before the war. It is a job for an experienced carpenter who is familiar with machine tools. Conservation of space has become the main desideratum. No longer is it permissible to mark crates or boxes "this side up," they must be so braced that they will stand in any possible position. Due to the inexperienced men now hired as dockhands, rough handling must be taken into consideration. When boxed as for shipment to the American base in France, the machine must be so blocked in position that if tipped over, the weight will be supported.

In the earlier days of the war, a shipment of machine tools for France left an eastern builder's siding, each machine wearing a heavy coat of vaseline as a preventive against rust. The consignment was loaded on a grain boat. Some of the grain sifted through the insecure wrapping around the machines and when the shipment arrived on the other side, a fine crop of wheat had sprouted. Machines are now coated with white lead and wrapped in paraffin-treated paper. Every precaution must be taken to guard against rust and breakage.

With a cessation of German submarine activity, an increasing measure of attention perforce must be paid to these details. True, during the war many exported machines have been paid for, delivered at seaboard. Builders have been giving but little thought to them after that. From this time forward, however, machines are destined to play an important part in building up foreign trade. Devastated industries in northern France and in Belgium in many instances, will call for American machines in their rebuilding. South America is considered by many to be the solution of the tool builders' after-war problem. If the latter expect to secure and hold foreign trade in the keen competition that will obtain they will find packing to insure safe delivery a prerequisite.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE OR IRON ORE PRICES ON PAGE 1044

PIG IRON

Bessemer, valley	$35.20
Bessemer, valley, del. Pittsburgh	36.60
Basic, valley, delivered Pittsburgh	33.00
Basic, Pittsburgh	34.40
Basic, delivered Eastern Pa.	36.60
Basic, Buffalo, furnace	33.00
Malleable, valley, del. Pittsburgh	35.90
Malleable, Chicago, furnace	34.50
Malleable, Buffalo, furnace	34.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern), $34 furnace base.

2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern), base plus $1.25.

2.75 to 3.25 silicon (No. IX), base plus $5.00.

3.75 to 4.25 silicon, $40.00, plus $1 for each ½ per cent of silicon up to per cent.

No. 1X, delivered Philadelphia	40.60
No. 2 foundry, Pittsburgh	35.40
No. 2 foundry, Cleveland furnace	34.00
No. 2 foundry, Ironton furnace	34.00
No. 1 foundry, Chicago furnace	35.25
No. 2 foundry, Chicago furnace	34.00
No. 2X foundry, del. Phila.	38.85
No. 2X foundry, N. J. tidewater	39.05
No. 2X foundry, Buffalo furnace	35.25
No. 2 plain, del. Philadelphia	37.60
No. 2 plain, N. J. tidewater	37.80
No. 2 southern, Birmingham	35.25
No. 2 southern, Cincinnati	38.85
No. 2 southern, Chicago	40.25
No. 2 southern, Phila.	41.85
No. 2 southern, Cleveland	40.25
No. 2 southern, Boston	42.75
No. 2 southern, St. Louis	39.50
Virginia, No. 2X, furnace	37.50 to 38.50
Virginia, No. 2X, Phila.	41.85
Virginia, No. 2X, Jersey City	42.75
Virginia, No. 2X, Boston	42.95
Gray Forge, valley, del. Pittsburgh	34.40
Silveries, 8 per cent, furnace	47.50
Silveries, 8 per cent, Chicago	51.50
Low phos, standard, Phila.	57.00
Low phos, Lebanon, furnace	51.00 to 53.00
Low phos, standard, Pittsburgh	54.40
Charcoal, Superior, Chicago	38.70 to 39.00
Charcoal, Superior, Buffalo	38.50
Charcoal, southern to 2 per cent silicon	51.00

COKE

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

FERROALLOYS

Ferromanganese, 70 per cent delivered	250.00
Spiegel, 16 per cent fur., spot	75.00
Spiegel, contracts, furnace	75.00
Ferrocarbon, titanium, carloads, maker's plant	200.00
Ferrosilicon, 50 per cent, spot and contract, delivered	150.00 to 160.00
Bessemer ferrosilicon, 10 per cent	57.00
Bessemer ferrosilicon, 11 per cent	60.30
Bessemer ferrosilicon, 12 per cent	63.60

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS AND BLOOMS

Open-hearth, Pittsburgh	$47.50
Open-hearth, Philadelphia	51.30
Open-hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	63.80

SHEET BARS

Open-hearth, Pittsburgh	$51.00
Open-hearth, Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

SLABS

Pittsburgh and Youngstown	$50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.50
Grooved skelp, Pittsburgh	2.90c
Sheared skelp, Pittsburgh	3.25c

SHAPES, PLATES AND BARS

(In cents per pound)

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.23c
Structural shapes, N. Y.	3.245c
Structural shapes, Chgo.	3.27c
Tank plates, Chicago	3.52c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.48c
Tank plates, New York	3.495c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	3.17c
Bars, soft steel, New York	3.145c
Bars, soft steel, Phila.	3.13c
Bar iron, common, Phila.	3.73c
Bar iron, common, Chicago	3.50c
Bar iron, refined, Chicago	5.00c
Bar iron, common, Cleveland	3.67c
Bar iron, common, New York	3.745c
Bar iron, common, Pittsburgh	3.50c
Bar iron, refined, Pittsburgh	5.00c
Hard steel bars, Chicago	3.00c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh base	3.25c
Angle bars, Chicago base	3.25c
Standard bessemer rails, mill	$55.00
Stand. open-hearth rails, mill	57.00
Light rails, 25 to 45, mill	3.00c
Relaying rails, light, St. L.	60.00 to 67.00
Spikes, railroad, Pitts.	3.90c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	5.115c
Tie plates, Chicago	3.25c

WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Polished staples, Pittsburgh	3.65
Galvanized staples, Pittsburgh	4.35
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	5.00

CHAIN, PILING, STRIP STEEL

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	7.50c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

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SHEETS

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open-hearth, Chi.	5.27c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open-hearth, Chi.	6.52c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open-hearth, Chi.	4.52c
No. 10, open-hearth, Phila.	4.48c

TIN PLATE

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.75

IRON AND STEEL PIPE

Base Pittsburgh

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	51	37½
¾ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	69.80
Six-inch and over, Chicago	66.80
Four-inch, New York	70.70
Six-inch and over, N. Y.	67.70
Four-inch, Birmingham	63.00
Six-inch and over, Birmingham	60.00

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	3.50c
Bands, Pittsburgh	3.50c
Hot rolled strip steel, Pitts.	3.50c
Hot rolled strip steel, Pitts. stamping quality	4.00c
Shafting, Pitts., carloads	17 off to list
Cotton ties, Oct., per bundle	$1.96

RIVETS

Structural rivets, Pittsburgh	4.40c
Boiler rivets, Pittsburgh	4.50c
Rivets 7/16 in. and small., Pitts.	50 and 10 off

NUTS AND BOLTS

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50-5 off
Cut thread	40-10-5 off
Larger and longer	40 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50-10-5 off
Cut thread	50-5 off
Larger and longer	40-10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60-10-10 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	70-5 off
Gimlet and cone point lag screws	50-10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotation on leading products October 30, average for September, 1918, average for July, 1918, and average for October, 1917. Prices are those ruling in the largest percentage of sales at the dates named.

	Prices Oct. 30, 1918	Average prices Sept. 1918	July 1918	Oct. 1917
Bessemer pig iron, Pittsburgh	$ 36.60	$36.60	$36.60	$37.25
Basic pig iron, Pittsburgh	34.40	33.40	33.40	33.95
*No. 2 Foundry pig iron, Pittsburgh	35.40	34.40	34.40	33.95
*No. 2 Foundry pig iron, Chicago	34.00	33.00	33.00	33.00
Lake Superior charcoal, Chicago	38.70	37.70	37.50	37.50
Malleable, valley	34.50	34.90	34.90	35.20
Malleable, Chicago	34.50	33.50	33.50	33.50
**Southern, No. 2, Birmingham	35.25	33.50	33.50	33.00
*Southern Ohio No. 2, Ironton	34.00	33.00	33.00	33.00
Basic, eastern Pa.	36.60	32.00	32.00	33.00
**No. 2X Virginia, furnace	38.00	33.50	33.50	33.50
**No. 2X foundry, Philadelphia	38.85	34.50	34.50	34.25
Ferromanganese, 70%, delivered	250.00	250.00	250.00	285.00
Bessemer billets, Pittsburgh	47.50	47.50	47.50	58.75
Bessemer sheet bars, Pittsburgh	51.00	51.00	51.00	65.50
Open-hearth sheet bars, Pittsburgh	51.00	51.00	51.00	65.50
Open-hearth billets, Pittsburgh	47.50	47.50	47.50	58.75
Steel bars, Pittsburgh	2.90	2.90	2.90	2.90
Steel bars, Chicago	3.17	3.17	3.17	2.90
Iron bars, Philadelphia	3.73	3.73	3.73	4.935

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

	Prices Oct. 30, 1918	Average prices Sept. 1918	July 1918	Oct. 1917
Iron bars, Cleveland	$ 3.64	$ 3.64	$ 3.64	$ 4.50
Iron bars, Chicago mill	3.50	3.50	3.50	4.50
Beams, Chicago	3.27	3.27	3.27	3.00
Beams, Pittsburgh	3.00	3.00	3.00	3.00
Beams, Philadelphia	3.23	3.23	3.23	3.185
Tank plates, Pittsburgh	3.25	3.25	3.25	3.25
Tank plates, Chicago	3.52	3.52	3.52	3.25
Tank plates, Philadelphia	3.48	3.48	3.48	3.435
Sheets, blk., No. 28, Pittsburgh	5.00	5.00	5.00	7.75
Sheets, blue anld., No. 10, Pittsburgh	4.25	4.25	4.25	7.87
Sheets, galv., No. 28, Pittsburgh	6.25	6.25	6.25	8.81
Wire nails, Pittsburgh	3.50	3.50	3.50	3.87
Connellsville furnace coke	6.00	6.00	6.00	6.00
Connellsville foundry coke	7.00	7.00	7.00	6.00
Heavy melting steel, Pittsburgh	29.00	29.00	29.00	31.50
Heavy melting steel, eastern Pa.	28.50	28.50	28.50	26.00
Heavy melting steel, Chicago	29.00	29.00	29.00	27.00
No. 1 wrought, eastern Pa.	34.00	34.00	34.00	36.75
No. 1 wrought, Chicago	33.50	33.50	33.50	35.50
Rerolling rails, Chicago	34.00	34.00	34.00	36.00

(FOR ADDITIONAL PRICES SEE PAGE 1044)

Pig Iron Sales Become More Active

Peace Talk Produces Some Stimulation of Business in Certain Districts—Allocations for 1919 Continue Heavy—St. Louis Buyer Gets 45,000 Tons of Basic —Italy Wants 100,000 Tons Additional

Philadelphia, Oct. 29.—Pig iron sales although of a limited character continue numerous. At least 5000 tons of foundry iron for delivery this year has been sold by three Virginia furnaces. One Alabama and two eastern Pennsylvania producers have sold on a small scale for first half and it is likely that another eastern Pennsylvania interest shortly will sell a considerable tonnage for the first half. It is learned that the Virginia Iron, Coal & Coke Co., before withdrawing from the market last week sold approximately 25,000 tons for the first half. Eastern cast iron pipemakers who have been unable to get iron except for strictly government work will meet tomorrow with the war industries board to discuss requirements. Numerous allocations, some of them for the first half of 1919, have augmented the week's business. Allocations for low phosphorus iron have been numerous, including one for 8000 tons. Developments are beginning to take place in basic. One eastern consumer bought nearly 10,000 tons for the first half. The Phoenix Iron Co. is inquiring for a round tonnage of this grade for the first half. The American Pig Iron association met here last week to discuss current matters, including the proposal to adopt a uniform method of computing and reporting costs. No action was taken. The basic 8-hour work day was discussed. The Pennsylvania railroad is in the market for 7000 tons of first half foundry for Altoona. A representative seller makes the statement that indications are to the effect that consumers now are getting enough iron for their different requirements. One development is the increased difficulty of selling high-sulphur foundry iron.

Freer Selling in East

New York, Oct. 28.—The Virginia Iron, Coal & Coke Co. early last week withdrew from the market as a seller of foundry iron for first half delivery. This interest it develops was in the market for only one day and refused orders involving fully as much tonnage as those it accepted before closing its books. Selling of pig iron during the past week, outside of the business booked by the Virginia company, was not of extensive proportions, although participated in by a number of makers. A fair amount of Alabama foundry was sold for first half delivery in this district and two eastern Pennsylvania makers sold limited tonnages of foundry for first half. The two latter interests have not made any general offers, however, and cannot be considered as having entered the market. Another eastern Pennsylvania maker has withdrawn from the market after having sold a round tonnage of foundry for November and December delivery. A Virginia maker has notified sellers that it will take on a few limited tonnages of foundry for delivery this year. The Pennsylvania railroad has put out an inquiry for 5800 tons of foundry for first half delivery to its Altoona shops. Allocations of foundry iron continue to be made for delivery this year and a number of additional allocations of low-phosphorus for next year's delivery are reported.

Influenza Hits Production

Pittsburgh, Oct. 29.—Directly and indirectly, the influenza epidemic is affecting pig iron production; directly, through the loss of men at the blast furnaces and indirectly as a result of the curtailment of coke supplies, due in part to a smaller production and the fact that the railroads have been crippled through sickness. Few, if any furnaces have been banked for want of fuel, but there are some cases where the blast has been reduced to a point where little iron is being made. Operations of some furnaces have been affected by the fact that with a reduced number of cars of coke moving into the yards, it has been necessary to draw from stock piles and with labor for this purpose scarce, there has been difficulty in keeping up the furnace piles. As far as business is concerned, there are plenty of opportunities for sales for

prompt delivery, a considerable tonnage of bessemer being sought. Inquiries for this grade, however, go begging, for only about five furnaces in this and the valley regions are on bessemer and the output of these is under allocation for the rest of this year. The demands to be made upon the merchant furnaces over the first half of 1919 now are being calculated. Some blast furnace interests report their present allocations to be 125 per cent of probable output and there are few that are not booked full up to capacity. It is not hard in view of this condition to understand why inquiries for iron for prompt delivery cannot have much attention. Peace talk cannot yet be said to be much of a factor in the iron market, though the possibility of a cessation of hostilities is the subject of much discussion. Some contracts placed before the distribution of tonnages became largely a governmental function are still alive, but such cases are not numerous and peace would mean largely starting on a new page.

Production Is Hampered

Buffalo, Oct. 29.—Lack of coke due to influenza epidemics at the mines is seriously hampering iron production in the Buffalo district. One or two furnaces throughout the district have been banked, including one belonging to the Buffalo Union Furnace Co. The shortage is causing inconvenience all along the line and may shorten production to an appreciable extent, if conditions do not improve. A car shortage is also affecting furnaces adversely. There has been little or no pig iron allocating during the week and furnaces have been trying to concentrate on iron shipments. The demand for iron continues strong and furnaces are beseiged with inquiry despite the fact that nothing is being taken on except through allocations. Inquirers are told to go to Washington and have their requirements allocated, as this is the only way in which they can be handled. One local interest received an inquiry from a New England consumer for 2500 tons of foundry for December delivery and 2500 tons for January delivery but could not touch it.

Italy Wants Big Tonnage

Cleveland, Oct. 29.—A new lot of 100,000 tons of pig iron additional for Italy now is up for distribution among the various furnaces through regular government channels. This requirement calls for 65,000 tons of bessemer, 30,000 tons of foundry and 5000 tons of malleable and is wanted for November-March delivery. Allocations for domestic consumers of iron, particularly for first half, continue to run heavy. Of 114,000 tons placed in the week, 88,000 tons is for delivery in the first half of 1919. The week's allocations include 46,000 tons of basic, of which 45,000 tons was for a consumer in the St. Louis district and will be shipped over the first half; 24,000 tons of low phosphorus, of which 23,000 tons is for first half; 28,000 tons of foundry iron, including 14,000 tons for next year; 6000 tons of malleable, of which 800 tons is for first half; 4600 tons of silveries and bessemer ferrosilicon, of which 3600 tons is for next year; and 4500 tons of bessemer, of which 1500 tons is for the first half. New demands for iron before the pig iron committee are numerous; in fact more individual requests are pending than at any time previously, these numbering approximately 140. Among the lots pending is one of 12,000 tons of basic covering the first half requirements of an eastern consumer. Furnace operations in northern Ohio and adjoining districts continue to be but slightly affected by the influenza epidemic. Generally the plants have been able to keep their output slightly ahead of the September figure.

Chicago Market Uncertain

Chicago, Oct. 29.—Although the effect of peace talk has not been felt markedly in the pig iron market, there are indications that it is having some effect. This is noticed by some dealers in a tendency of melters to seek further supplies and also by a new tendency on the part of some makers to offer tonnage more freely. The principal producer in this territory has not changed its policy and is booking small tonnages for delivery during first half of 1919 from regular customers engaged in essential work. Heavy allocations are being received by this interest in lots up to 1000 tons and recently 20,000 tons was allocated to one maker for use by a Wisconsin foundry taking on a large contract for semisteel shells. This melter has had a total of about 50,000 tons allocated for its use over the next eight months. A southern interest has decided to make contracts covering about 5000 tons for first half of 1919 to melters with first rate credit, engaged on war work. This is a comparatively large tonnage for this maker. Another southern maker is offering 1000 tons of off sulphur basic iron for 1918 delivery, part of this being iron already made and the remainder entirely probable under present fuel conditions. None of the tonnage of iron offered by the Virginia Iron, Coal & Coke Co. was sold to melters in this district as the freight differential was decidedly against the west as compared with eastern users. A Tennessee stack recently booked orders amounting to about 800 tons for delivery during November.

Buyers Show Hesitancy

Cincinnati, Oct. 28.—Peace rumors have caused melters to hesitate before trying to place any orders for shipment next year. No one will venture any opinion as to what the near future may develope but no matter what happens in Europe it is the prevailing opinion that a shortage of iron will exist in this country for a long time to come. Coincident with the increased allocation of foundry iron to different melters who have urgent work in hand, there is a report that a few cancellations have been made by firms who are not working on war contracts, and evidently they do not wish to take a chance on the future. Staged with other trouble factors that the furnaces have to contend with, is curtailed production on account of the influenza. The epidemic has by no means reached the point where any furnace has had to bank on its account, nor has production been cut down as much as is generally reported. Conditions are generally favorable for the production of high silicon iron in the south as well as in southern Ohio, and the furnaces have been taking advantage of the opportunity to turn out this grade of iron as rapidly as possible, as it is in demand. All of the Virginia foundry iron that was put on the market here two weeks ago was sold without delay, and no further offerings have come from the furnaces in that district.

Buyers Inquire Far Ahead

St. Louis, Oct. 26.—Efforts are being made by consumers of pig iron in this district to purchase tonnages for delivery for the second and third quarter of next year. Thus far, however, selling agencies and producers have not showed any particular eagerness to book this business. On the contrary, there is a decided disposition to stay off of distant commitments, it being argued that the iron will always bring its value, and contracts under existing conditions in the trade are not especially desirable from a selling viewpoint. It would be possible if sellers so desired, to place very large tonnages for the period mentioned. The general demand for all deliveries continues enormous. Steel mills and foundries are gaining in output, and their requirements of raw material are correspondingly augmented. War plants have been receiving ample iron for current melting, though during the past week the pace of deliveries has slackened slightly, due to interference in transportation caused by the influenza epidemic. So far as can be learned there is no accumulation to speak of, and nonessential manufacturers are faring no better than heretofore. Southern foundry makers report they have reached the maximum of possible production, and that any change is bound to be in the direction of a decrease. All of them doing business in this region have sold everything they have made or expect to turn out for weeks to come. It is a notable fact that the essential industries are absorbing 100 per cent of the total production of all varieties of pig iron, and no surplus is likely to develop for an indefinite period. A number of the more important nonessential foundries in this district have succeeded in obtaining sufficient war work to keep their organizations together. This is true especially of the stove plants.

Allocations Still Numerous

Birmingham, Ala., Oct. 29.—More business continues to be sent to the Birmingham district through the government and allocations recently have been numerous. Production continues unsatisfactory, the principal cause of the defection being influenza epidemic. However, this situation is being overcome steadily and there is hope that the coming month will be a decidedly better one in every way. Basic has the call and foundry iron production is very small. Shipments of iron from the district though brisk are not making a very heavy inroad into orders on hand. Presence in the district of foreign inspectors indicates that export business is far from being concluded. Short-

age of coal, coke and ore has been increased and need of limestone and dolomite is now reported. Some inquiries for pig iron still are coming in from consumers.

Government requests have been received by the Republic Iron & Steel Co. to change one of its blast furnaces here onto basic iron. Both furnaces at present are producing foundry grades. To swing onto basic practice now would greatly hinder shipments of foundry grade to the allies for it is understood the production of these stacks at present is being used to fulfill French contracts recently booked.

Alloy Output

Will be Considered at New York Meeting—Market Quiet

New York, Oct. 28.—Manufacturers of ferromanganese and spiegeleisen will hold a meeting here in New York with members of the subcommittee on ferroalloys the latter part of this week to discuss the situation with regard to production of these metals at this time.

The market in ferromanganese and spiegeleisen continues quiet. Although numerous sales continue to be made there is no large business before the trade and hence the market is not being tested. Sales of small tonnages of ferromanganese for spot and nearby delivery are being made at $250 delivered, and spiegeleisen continues to bring $75 at the furnace for 16 per cent metal.

Peace Talk Restricts Business

Pittsburgh, Oct. 29.—A marked absence of demand for ferroalloys is to be noted here. Consumers generally are covered over the remainder of the year and in some instances to some extent into 1919 and since peace talk persists, naturally, there is not much inclination to act in the matter of 1919 requirements. Little significance is attached here to the big inquiries put out in the east for 50 per cent ferrosilicon. Both the United States Steel Corp. and the Bethlehem Steel Corp. it is said can produce this alloy for much less than they can buy it on the open market and their inquiries are believed to be chiefly for the purpose of finding out whether or not bids will be made low enough to induce them to buy. Little is going on here in this alloy and no definite price basis exists. Some makers are quoting $157.50 for first quarter of 1919, $155 for first half and $152.50 for the whole year, but only occasional contracts are being booked at better than $150. Some makers who are newcomers in the business are quoting rather low prices and this makes it incumbent on other producers to meet such offers to hold their regular trade. Large tonnages of 10 to 12 per cent bessemer ferrosilicon are wanted for immediate delivery, but available supplies are too limited to permit of the acceptance of any business. It has been several weeks since sellers here have had an inquiry for 70 per cent ferromanganese. Buyers seem to have an idea they will buy for less money than is now asked. Only occasional, and usually only carload lot, sales of 16 to 18 per cent spiegeleisen are reported.

Car Supply Limits Coke

Influenza Epidemic Causes Shortage of Crews—Oven Production Still Lower—Further 1919 Contracts Are Closed

Pittsburgh, Oct. 29.—It is getting to be a regular event for the car situation to become a factor in the coke supply in October. A year ago, it was a premature touch of winter in the shape of a blizzard that tied the transportation situation into knots and the supply of cars, which was short at the time, did not become plentiful again until well along into the summer. The influenza epidemic has done this year what the snow storm did a year ago. The cars have been available, but the crews have not been. The movement of coke from last Thursday on until Sunday was almost at a standstill. The resulting accumulation on the Pittsburgh & Lake Erie railroad was practically cleaned up on Sunday, through the use of extra crews released through a smaller movement of other freight. Conditions also were bettered on the Pennsylvania lines, but no improvement was noted as far as the Baltimore & Ohio road was concerned. There has not been a shortage of coke so acute as to force blast furnaces to bank, but the pinch has been dangerously near that condition. The influenza has crippled the railroads and until it subsides and more normal operations are restored, the car situation will be watched with a good deal of anxiety. There are a few complaints that the quality of the coke coming to the blast furnaces is not satisfactory, but such reports are not common enough to be important. On the whole, the quality of the coke now provided leaves little room for complaint. Production of coke in the Connellsville region for the week ended Oct. 19, was 314,145 tons, compared with 322,920 tons in the previous week.

Further contracts for furnace coke for next year have been made and the tonnage placed has been considerable, according to *The Connellsville Courier*.

Good Sales in East

New York, Oct. 28.—Coke business transacted in this district during the past few weeks has reached a large volume in the aggregate. It comprises both beehive and by-product coke, and the sales are being made both to foundries and blast furnaces. The coke figuring most actively in this business is that produced at the by-product plant at Seaboard, N. J. Large tonnages of this coke have been sold to blast furnaces for delivery over the first half of 1919. The tonnage production at this plant will be much larger during that period than at present, owing to the fact that a new battery of ovens is being added.

Regulations Cause Delay

Cincinnati, Oct. 28.—Reports from different districts are that the red tape considered necessary in making delivery is causing delays in shipments to small consumers. The problem of getting the fuel to the larger consumers, according to schedule, is by no means an easy one to solve. The different blanks that have to be filled out are somewhat intricate for an ordinary clerk and frequently officers in executive positions have to devote some time in aiding their employes. There is very little contracting for either furnace or foundry coke. An occasional carload is offered for prompt shipment but this is taken promptly.

Deliveries Slow Down

St. Louis, Oct. 26.—Dealers report a rather serious decrease in deliveries on foundry coke from the Connellsville district during the past week or 10 days, due to congestion in that district. Up to that time, however, the movement had been in excellent shape. The tie-up in the east, according to advices received here, is attributable largely to labor shortage. Railroad officials have promised to leave nothing undone to forward shipments. Several important agencies report that their deliveries have fallen off as much as 50 per cent during the last week. Contracting for the first half of next year, all of which has been on a basis of consumption for the corresponding period this year, is about over. This operation was of a routine character, coming strictly under government regulations. Dealers report they have absolutely nothing in the way of free coke to offer, and their principal occupation now consists of making reports to the fuel administration. There continue numerous inquiries from the southwest and despite the improvement in conditions during recent weeks, that general section is not getting anything like full supplies. Texas, Arizona, New Mexico, and even Arkansas and Oklahoma have been running on famine rations, especially of foundry grades.

Production Seriously Affected

Birmingham, Ala., Oct. 29.—The old saying that it never rains but pours is true as to the coal and coke production in Alabama, for in addition to labor and transportation difficulties which were felt for some time, the influenza epidemic now has increased the slump all around. For the past two weeks the fuel output has been exceedingly ragged and as a consequence the coke production has begun to drop. Warren S. Blauvelt, director of the bureau of coke of the fuel administration, on a trip in this district, advised the appointment of an assistant to the local production manager of the fuel administrator, and records will hereafter be kept on coke as well as coal. Effort is to be made to bring about a cleaner coke, also, some complaint having been raised by the furnaces along this line. Coal production for the week ending Oct. 19 in Alabama was 323,310 tons, the smallest since the records have been kept. Furnace operations have not as yet been handicapped as much by coke as by other raw materials.

Scrap Market Slowed Up

Peace Talk Still is Dominant Factor—Prices Slightly Easier—New Cast Ruling Applies at St. Louis

FOR COMPLETE SCRAP PRICES SEE PAGE 1044

Chicago, Oct. 29.—More than in any other department of the iron and steel market, scrap is being affected by the continuing talk of possible peace in Europe. It is having the effect of preventing consumers from taking on new obligations if they can possibly get along with present supply and is reducing the market to the barest necessities. Heavy demand for steel grades is not abated by this factor and there is heavy shortage in this territory as well as demand for these materials in the east. Demand for rolling mill grades is slack, due in part to the recent unsettling of market conditions by announcement of new classifications and prices on bar iron. Foundry grades have not been strongly active and are quieter now than previously. The Chicago, Milwaukee & St. Paul has issued a list offering 1150 tons and the Monon offers 1185 tons, including 500 tons of No. 1 steel rail.

Offerings Are Freer

New York, Oct. 28.—Dealers in the New York scrap market report that supplies have been more freely offered during the past week, as a result of the present peace agitation, than in many months. However, demand has been of sufficient volume to absorb all material as fast as the yards can move it, and prices, consequently, are firm. Owing to congestion at Lebanon, Pa., the freight traffic committee, Philadelphia, has been refusing permits during the past week for shipment of material to that city. It is expected that this ruling will be in effect at least another week or 10 days. T. A. Gillespie & Co., are offering 30 carloads of corrugated sheets and 400 to 500 tons of shells, salvaged from the wreck of the government shell loading plant at Morgan, N. J. The Interborough Rapid Transit Co. during the past few days has sold 1800 tons of scrap.

Easier to Buy Material

Philadelphia, Oct. 29.—Iron and steel scrap now is easier to buy than at any time in months. Although not reflected in prices, peace talk has made the market distinctly easier. This tendency toward easiness is particularly noted in heavy melting steel which can be bought more freely. Despite the more liberal offerings, however, it is not apparent that there is any surplus of actual scrap tonnage now available. Malleable and wrought scrap continue difficult to obtain.

Peace Talk Causes Uncertainty

Pittsburgh, Oct. 29.—Although the supply of scrap iron and steel still is reported as very limited and consumers are taking supplies fairly freely, persistant peace talk continues to create a feeling of uncertainty. Few sales of any account are coming to the surface although quietly a considerable tonnage is reported to be moving. Several of the steel plants in this district have accumulated fair sized reserves and are inclined to use the German peace drive as an argument in favor of price concessions. Sellers, while deprecating the idea of immediate peace, are said to be a little bit more amenable to argument with regard to prices. Sale of 1000 tons of cast scrap at $29 and commission to a Pittsburgh district consumer is noted.

Strength In All Grades

Buffalo, Oct. 29.—The market for scrap continues very strong for all grades. All descriptions are selling at the government maximum price, so that the price level no longer reflects very perfectly the real condition of the market. Heavy melting steel is very scarce as it has been for months and malleable and cast are in such strong demand that consumers are not able to obtain anything like sufficient quantities. Every tonnage is snapped up as quickly as it comes on the market, so that the tonnages in this grade are not exceptionally large. Shell factories in this district are turning out enormous tonnages of turnings, greater, in fact than ever before but this material is being assimilated as fast as produced.

No Clauses Against Peace

Cleveland, Oct. 29.—The few scrap iron and steel contracts that are now being made contain no clause protecting either side from a free market in case one results before the termination of the contract, dealers say. This is cited by some as proof that government control over the scrap market will continue for quite a while after the war. Excepting possibly a break of several dollars immediately upon the signing of peace, scrap iron and steel prices will be sustained for some time after the war, especially until the reconstruction demand has been reasonably cared for, many dealers believe. More than one dealer will be found who predicts that melting steel will bring more than $29 from open hearth interests after the government lid is taken off. Some talk is heard of the wisdom of minimum prices to cover the period of reconstruction. Prices are unchanged, but are not so firm as a few weeks ago. The present selling movement could not be called marked, yet dealers are anxious to keep their material moving. Yard labor is affected now more than at any previous time by influenza, and efforts to market unsorted scrap are more in evidence.

Market Becomes Sluggish

Cincinnati, Oct. 28.—Conditions are very sluggish. Few sales of any consequence have been made. Melters are playing the usual waiting game whenever anything in the nature of public news presages an important political change. Scrap dealers are also not inclined to take hold at the present time and all quotations are weak. However, dealers have lately had no trouble in getting $34 per gross ton for No. 1 machine cast scrap delivered at consumers' yards.

Revise Cast Scrap Price

St. Louis, Oct. 26.—The market for scrap iron and steel has lapsed into relative quietness, after the rather brisk selling movement of the preceding week. The undertone throughout the entire list is weak, though with the exception of No. 1 cast agricultural and machine there has been no radical price revision. On No. 1 cast agricultural there was a cut from $30 to $30.50 to $28.50 to $29 caused by the ruling of Chairman Phillips of the scrap committee to the effect that none of that grade may be sold higher than $29, as against $34, the former maximum price. This decision means only machinery cast, cut in cupola sizes, is covered by the old $34 maximum. This bit of news caused quite a flurry, owing to the fact that heavy tonnages of agricultural scrap are held here, and where the holders are long the material they face substantial losses. Railroad and agricultural malleable were both quotably lower and busheling, which is dull at the moment, was off $1. Leading dealers are cutting down their purchases, believing that caution is in order because of the uncertain political situation abroad. Yardmen and collectors, while still willing to dispose of their stocks, are not so eager to unload as was the case earlier in the month. There continues a good demand for steel, and a fair inquiry for rolling mill grades, but the mills are pretty well covered.

Contracts Being Worked On

Birmingham, Ala., Oct. 29.—Much scrap iron and steel is being moved from the yards of dealers in this district, against old contracts on which a large amount of material still is to be delivered. In many of the grades, the maximum government price is either being obtained or closely approached. Wrought and No. 1 cast are the more active lines but heavy melting steel has been in steady demand. Companies working on essentials for the war program are looking out constantly for old material. The peace talk has been reflected by some lagging in the urging of deliveries on old contracts placed. The effects of the influenza epidemic still are being felt in the getting in of scrap and in the sorting, and the delivery.

Wire Orders

For Foreign Delivery are Still to be Formally Placed

Pittsburgh, Oct. 29.—Wire manufacturers in this district still await official word with regard to the allocation of the 150,000 tons of military barbed wire, notice of which was first sent out on Sept. 12. The various makers have received word as to how much they are expected to produce, but there is no disposition on their part to go ahead without the actual order. Mill operations continue to run around 50 per cent of

capacity or less, although the leading interest reports a much higher rate. Only those departments of the mills turning out products essential to the war program, are being operated at all full. Suggestion from Washington that the jobbers will be given an A-6 priority on replacements of goods shipped to direct government work finds favor here, as this class of distributors has had an extremely difficult time in getting even a small percentage of replacement orders filled.

Allocate Barbed Wire

New York, Oct. 28.—Allocations for approximately 25,000 tons of barbed wire for shipment to General Pershing's army have been made during the past week by the subcommittee on wire. This tonnage is apart from the 65,000 tons which recently were allocated for shipment to the French government.

Heavy Taxes

Allowed by Steel Corporation Reduces Net and Dividend

With the setting aside of $101,987,347 for federal taxes, the United States Steel Corp. report for the third quarter of 1918 shows earnings before deduction for depreciation and sinking fund, etc., of $42,961,589. This compares with $68,243,784, the earnings for the third quarter of 1917, and with $62,557,391 for the second quarter, 1918. This liberal allowance for taxes made necessary the reduction of the extra dividend to 2 per cent from the usual 3 per cent. This places the stock on a 13 per cent annual dividend rate instead of the 17 per cent it has been paying for the six preceding quarters. In the three quarters of the present year, the Steel corporation has allowed for federal taxes, the vast sum of $224,288,795, which comprises in addition to the amount mentioned above for the third quarter, $31,585,198 in the first quarter, and $90,716,250 in the second. The comparative income account for the thrid quarters of 1918 and 1917 is as follows:

	Third quarter 1918	Third quarter 1917
Earnings	$144,948,936	$131,976,797
Taxes	101,987,347	63,733,013
Net earnings	42,961,589	68,243,784
Depreciation, sinking fund, etc.	10,892,197	12,998,407
Net income	32,069,392	55,245,377
Interest on bonds and premium bonds, etc.	5,404,081	5,513,048
Balance	26,665,311	49,732,329
Preferred dividends	6,304,919	6,304,919
Common dividends	6,353,781	6,353,781
Extra dividends	10,166,050	15,249,075
Surplus	3,840,561	21,824,554

Total earnings, exclusive of the income and excess profits taxes, amounted to $144,948,936, which is $8,326,000 less than the high record attained in the quarter ended June 30. An analysis of the quarter's monthly figures, shows a steady decline in earnings from month to month.

Net income for the third quarter amounted to $32,069,392, as against $52,399,484 as of June 30, while the surplus of the quarter, after deduction for dividends reached the nominal figure of $3,840,561. For the quarter ended June 30, the surplus figure stood at $19,017,375.

Shops Lose B-4 Automatic

New Ruling Rescinds Privilege to Fabricators to Replace Stocks—Represents More Rigid Control of Structural Work

Cleveland, Oct. 29.—Steel fabricators no longer are to be allowed to use the automatic B-4 priority rating in obtaining replacement of materials for stock. Henceforth to obtain supplies of this character, they must resort to an application for a priority certificate. Notice of this modification of the previous regulation on the part of the priorities committee has been conveyed to the fabricators by letter by Steel Director Replogle in advance of the new priority circular about to be issued by the priorities division. This communication is as follows:

"The priority committee of the war industries board in the issuance of a new circular which will be mailed to the trade in a few days has eliminated the replacement privilege to fabricators on an automatic B-4 priority rating which was previously permissible under instructions contained in supplement No. 1 to circular No. 4. In the future, fabricators of structural steel will obtain the supply of steel necessary for use on construction approved by the war industries board applying for a priority certificate from the priorities committee of the war industries board on the regular forms of application that they will supply for this purpose.

"Steel manufacturers have been notified of this change of rules which applies to orders now on the books which were entered under the old arrangement, as well as new orders."

The effect of this new ruling is to tighten the hold of the government upon the supplies of structural material. In conformity with it the mills are advising fabricators in the event they cannot obtain priority certificates to cancel the orders now on the books. Large orders for army trucks of the four-wheel drive type are about to be placed. It is reported that probably 20,000 trucks will be ordered. This order is in addition to the 25,000 Class B army trucks which were recently closed with builders in this and other territories. Material continues to be ordered for large numbers of tanks to be built in this district.

Inquiry from structural fabricators relative to the wisdom of keeping up stocks with a view to possible reduction of price to follow peace is being received. Building permits are being obtained with greater difficulty. During the past two weeks a decrease has been noted in the applications for permits due to the fact that over 90 per cent have been refused. Many contractors are disbanding their organizations.

Navy Requirements Up

New York, Oct. 28.—Government requirements again made up the greater portion of the structural tonnage which came up in this district during the past week. The biggest job now up involves about 2000 tons for buildings to be erected for the navy department at Yorktown, Va. General contracts have been awarded for alterations and extensions at the Boston navy yard and for an inspection shed for the public service commission of New York. The steel for rebuilding the T. A. Gillespie & Co. shell loading plant at Morgan, N. J., is to be furnished by the American Bridge Co. Very little activity characterizes the plain shape market. Eastern mills are shipping only on orders having an A priority rating. They are not encouraging the placing of orders having lower than an A rating. A few tonnages continue to be placed in this district through allocation.

Activities Somewhat Curtailed

Pittsburgh, Oct. 29.—Activities of the steel fabricating companies have been somewhat curtailed by the loss of men due to the influenza epidemic and also because somewhat lighter tonnages of blooms have been going to this purpose lately. Nothing but Emergency Fleet corporation and other essential work is being done at the shape mills.

Building Ban in Effect

Chicago, Oct. 29.—Full effect of the war industries board's ruling that no new construction can be undertaken unless it is shown to be thoroughly essential is being felt in the market for structural material. Projects presenting themselves in the west recently have not been able to get by the censor and the only tonnage placed involves 348 tons, for a building for the Monsanto Chemical Works at East St. Louis. Allocations of structural material to be fabricated for ship parts continue to be made and bridge shops engaged in this class of work are fully occupied.

CONTRACTS AWARDED

For rebuilding T. A. Gillespie & Co.'s shell loading plant, Morgan, N. J., 500 tons to American Bridge Co.

Miscellaneous work for Pennsylvania railroad, 360 tons to American Bridge Co.

New bay and wing extension of main foundry of Hubbard Steel Casting Co., Michigan City, Ind., 250 tons, to Northwestern Bridge & Iron Co.

Building for chamber set No. 3, Commercial Acid Co.'s plant, East St. Louis, Ill., for the Monsanto Chemical Works, 348 tons, to the Illinois Steel Bridge Co., Jacksonville, Ill.

CONTRACTS PENDING

Buildings at Yorktown, Va., 2000 tons, bids to be opened by navy department, Nov. 4 and Nov. 11.

Inspection shed for public service commission 148th street, New York, 350 tons, general contract to A. Guidone.

Alterations and extensions at Boston navy yard, 1800 tons, general contract to Evatt Construction Co.

Foundrymen to Meet

The twenty-second annual convention of the National Founders' association will be held at the Hotel Astor, New York City, Nov. 13 and 14. The convention's war dinner will take place Wednesday evening, Nov. 13. An interesting program is in course of preparation.

Await New Bar Iron Rules

Mills Expect Doubt Over Schedule to be Clarified Following New York Meeting—War Orders Going Through

Chicago, Oct. 29.—Although the prevailing epidemic is claiming victims among employes of steel plants at Chicago, the effect has not been as severe as seems to be the case in the east. In spite of the shortage produced by this cause, mills are operating at top speed and in the case of the leading interest present indications are that October will break all production records of this interest. Present production rate is the highest of the year and with a longer working month than usual the total is expected to be most unusual. Fuel conditions are much improved, which is having much to do with this result. Orders by the government for shell bars are being placed steadily to provide material for new plants taking up the production of shells.

Selling of bar iron is small as the recent announcement of changes in extras and base prices has left the market somewhat in the dark and as a result has slowed up business. This applies to domestic tonnage, but export business is continuing at the usual rate. As a result of a conference of bar iron producers in New York last week, a further official announcement somewhat modifying the recent schedule of base prices and differentials is expected shortly. This will remove objections made by some producers and is expected to put the situation on a better basis.

As to hard steel bars rerolled from rails the situation is as tight as could be imagined and until larger supplies of rerolling rails are available, no change is expected unless it becomes impossible to continue operations for lack of material.

War Tonnages Placed

Cleveland, Oct. 29.—Miscellaneous war requirements continue to direct to the mills numerous allocations for a variety of purposes from consumers in this district. Bars for tanks, trucks, cranes and other war work were placed during the week. In all cases the tonnages were small. Jobbers continue to buy reinforcing bars, channels, etc., rolled from shell steel discards. A brisk trade from store is being carried on in these products. One order of the week was for 300 tons. Some of the implement manufacturers still are hesitating to take advantage of the recent $5 concession, being, as recently stated, reluctant to commit themselves not to advance prices on their product during the present season.

Big Inquiries Are Out

Pittsburgh, Oct. 29.—Essential needs continue to absorb practically the entire output of makers of nuts, bolts and rivets here. The quartermaster's department has asked for bids on 2,888,000 machine bolts, 1,680,000 tire bolts and 2,956,000 stove bolts, bids to be in by Nov. 4.

Pershing Gets Many Rails

New Orders Distributed for 380,000 Tons for France—Large Car and Locomotive Orders Also Placed

New York, Oct. 29.—Distribution of a new recent order for 380,000 tons of bessemer rails for the American Expeditionary forces among the various mills has been completed. These rails are of the 80-pound type and have been called for by General Pershing to cover new requirements of railroad construction which have arisen in connection with the advance of the American forces. In the roling of these rails, 150,000 to 160,000 tons will be supplied by the Illinois Steel Co., 34,000 tons by the Lackawanna Steel Co., 32,000 tons by the Cambria Steel Co., a considerable tonnage by the Carnegie Steel Co. and 25,000 tons to Bethlehem Steel Corp. In the same connection large orders for freight cars and motive power for General Pershing's needs continue to be placed. Full distribution of the 40,000 freight cars which it was announced last week had been placed still is to be made public. The American Car & Foundry Co., the Pressed Steel Car Co., the Standard Steel Car Co., and other builders received allotments. That going to the Pressed Steel Car Co. calls for about 5500 cars. The Koppel Industrial Car Co., Pittsburgh, will supply 500 cars. The Lima Locomotive Corp. has received a new order for 100 locomotives for shipment to France.

The request of the war industries board that rail makers sell no second quality rails without first submitting a list of such rails to the government has resulted in the withdrawal of numerous offers of second quality rails which had been made in this district. Altogether, several thousand tons of rails were involved. A list of these rails is to be sent to Washington for government acceptance or rejection, and there will be no sales to any other customers in the meantime.

Rail Mills Well Engaged

Pittsburgh, Oct. 29.—High rate of activity still is observed at the mills engaged in rolling standard rails, although like almost all departments of the steel mills, production has been affected by the influenza. Standing orders for light rails are heavy and makers are not making much progress with working down the bookings, and the steel supply for this purpose chiefly is discards. Only a fair demand exists for standard spikes and the orders coming out mostly represent pressing needs. Makers of small spikes are heavily committed but seem to be making some headway on orders booked some time back.

Roads Want Fastenings

Chicago, Oct. 29.—Considerable inquiry is being entertained by steel mills for railroad track fastenings and also for material to be used in car and track repair. Some tonnages of fastenings have been placed recently in this territory. Some railroads are inclined to make the effort to place further tonnage of steel rails, but mills generally are taking the position that with present large unfilled orders for rails, it is not good business to book further lots. Mills are being asked to furnish the remaining material needed to finish the order of Russian freight cars which has been revived after being quiescent several months. Allocations have not yet been made of steel for the most recent purchase of military cars to be used in France but this is expected to be placed shortly, as these cars are high on the preference list.

Mixed Demand

Is Shown In Sheets—France Places Blue Annealed Tonnage

Youngstown, O., Oct. 30.—Inquiry for sheets in some sections of the valley has fallen off considerably; in other parts, however, it continues to be brisk with no signs of a let-up. As to the former case makers attribute the cessation to the fact that buyers have made inquiries so often only to find their chances of obtaining sheets nil that they have given up in despair probably going into another territory. About the only opportunity a consumer has of securing any sheets is to take what is offered him in the waster line and even an offer of this nature is few and far between. The supply of sheets has tightened considerably the past few weeks as far as the mills here are concerned. Few deliveries are being made that do not carry an A priority. The class of trade which probably realizes this condition the most is the jobbing trade. The latter is to be helped considerably however by its having been allowed by the priority committee an A-6 on replacements for direct government orders.

Government orders continue to demand first-hand attention on mill schedules. While the size of the orders are in no way comparable to those which came to the mills this time last year, yet the tonnage in the aggregate is sufficient to keep the rolling schedules filled most of the week in view of the fact that mills are only operating near 70 per cent of capacity. Recent French orders for blue annealed are commanding the attention of one maker to the extent that two of his mills are sold up for the balance of the year.

Demand for terne sheets has been brisk recently and among contracts closed was an order for 1500 sheets for a Cincinnati consumer. The automobile trade lately has been a large

buyer of this material and continues to make inquiries frequently.

France Gets Sheets

Philadelphia, Oct. 29.—A large tonnage of blue annealed sheets for shipment to France has been distributed among various mills. This tonnage is for delivery in 1919.

Epidemic Affects Production

Pittsburgh, Oct. 29.—Operations of the sheet mills not only are restricted by the shortage of sheet bars, but also by the fact that mill organizations have been seriously reduced by the influenza epidemic. It is doubtful if any of the mills now is running higher than 50 per cent of capacity and in a good many plants, the rate is considerably lower. The loss of skilled workmen as a result of the plague especially is marked. Direct government orders are absorbing practically the entire output of the mills; indeed, it is doubtful if all manufacturers are keeping abreast of their orders of this character.

Await Order

From War Industries Board As To Tin Plate Production

Pittsburgh, Oct. 29.—Makers of tin plate have not yet received official word as to what they may or may not do in the matter of production. The program was the subject of a conference of manufacturers here last week and the results of this meeting now are in the hands of the war industries board for approval. Some doubt has been expressed that sufficient business was in sight to keep the mills up to the 70 per cent rate of operations, which the allotment of steel would permit. It is understood, however, that the forthcoming statement of the war industries board will make some reference to container requirements for dried beans and should this take the form of a release of shipments for this purpose, the mills will have no trouble in running at the full rate allowed by the steel allotment. The embargo on tin plate shipments for this purpose, which in the original order was to have expired on Sept. 15, still is in force. What gives basis to the expectation that this restriction will be lifted is the fact that not only are dried beans an important food, but the war industries board fully realizes the importance of keeping intact the tin plate mill organizations, so that when the spring demands come round, there will be no trouble in restoring 100 per cent operations. Considerable tonnages of tin plate intended for shipment to Japan are reported to be held at Pacific ports. The possibility that these stocks will leave the country this year is believed improbable. Under the arrangement whereby Japan turned over ships in exchange for steel, licenses for the shipment of 750,000 base boxes of tin plate were issued, the shipments to cover a year. Before the end of June, however, fully 800,000 boxes had gone to Japan; hence, the holding up of further shipping permits. Influenza has hit the working forces of the tin plate mills but the effect on production has not been marked.

Plates Placed For China

Eastern Mills to Supply 15,000 Tons to Orient Shipyards—Other Allocations Made—Eastern Production Recovering

Philadelphia, Oct. 29.—A Pittsburgh mill has been allotted 15,000 tons of plates for shipment to China for the building of four boats for the Emergency Fleet corporation under contracts recently placed with American interests. A large tonnage for France and 1000 tons for Italy also were included in the week's orders. The latter lots are to be shipped after Jan. 1, by eastern mills. Another large tonnage for Hog island also was distributed. Much production has been lost among eastern platemakers by reason of the influenza epidemic. About a month ago, eastern mills were operating around 95 per cent; two weeks ago this rate had dropped to around 40 per cent, and it is now 60 to 70 per cent.

No Cut in Production

Pittsburgh, Oct. 29.—Revision downward of shipyard needs of plates has been followed by no curtailment of the production of mills in this district. Beyond the announcement of Director General Schwab of the Emergency Fleet corporation releasing from 10,000 to 15,000 tons of steel a week to other purposes, manufacturers here have no information nor have they had orders to curtail. Distribution of 40,000 cars for export to France has been made and Pittsburgh builders have been given their share. It is understood that these orders take preference over those already on the books of the builders of domestic railroads.

Place More Ship Material

Chicago, Oct. 29.—Heavy tonnages of ship material are being allocated by the government, the largest tonnage placed recently in the west covering about 30,000 tons for a western shipbuilder. In addition to this a multitude of smaller lots have been placed with mills, giving a heavy order book.

Push Shell Steel Output

Take Ingots From Other Mills to Boost Production—British Want More Tonnage—Italy Buys—Harmonize Specifications

Youngstown, O., Oct. 30.—Efforts are being made this week to concentrate more on shell steel production as is shown by various bar and finishing mill curtailments in this district. Several tube and skelp mills and three bar mills are idle in order that a greater tonnage of steel may be available for making projectile material. Other curtailments are likely to follow in view of further huge tonnages of shell steel being on the brink of distribution. In the early part of this week the British sent a cablegram to Washington requesting the government to grant them permission to place further tonnages of shell steel among American mills. It is expected immediate action will be taken by government officials and that allocations will be under way in a week or more. Just what tonnage the British require is not given out.

Recent orders for munition steel placed by the Italian government aggregate between 90,000 and 100,000, the majority of the allotments among American makers being for small sizes for delivery over the balance of the year. Mills are well booked with United States projectile steel tonnages until the first of the year and in some cases have taken good-sized orders for 1919 delivery. First quarter deliveries, however, are just beginning to come out.

Makers are now in a position to increase production of shell steel for both this and the British government on account of the specifications for two medium sizes being standardized. Heretofore makers when rolling these sizes for the British were obliged to make a gothic-shaped billet; the United States government required a certain diameter at the rounded corner of the billet. The differential between the diameter called for in the British specification and the diameter specified by our government was such that three extra passes were required to meet United States specifications.

Offerings Continue Meager

Pittsburgh, Oct. 29.—Conditions in the market for semifinished steel remain much as they have been for some time. The great drive to get out sufficient tonnages of rails and shell steel continues to mean the sending of blooms to these mills at the expense of billets and sheet bars. And so tight is the control of the distribution that the tonnages rolled into bars and billets that there is no surplus supply for open market demands.

Brings Full Prices

Cleveland, Oct. 29.—Full prices continue to be paid by consumers for semifinished material which may not be strictly standard in all particulars. This is shown by the sale in this territory of 1500 tons of sheet bars made up of burnt end bars and rollings from plate shearings. The full maximum price obtained.

Shipping To Canada

Buffalo, Oct. 29.—Very extensive shipments of cold finished steel and shell rounds have been going into Canada during the past week for use in manufacturing shells and adapters.

Priority Regulations Are Amplified

Priority Authorities Issue Supplement No. 2 to Circular No. 4—Automatic Classifications Are Extended—Priority Privileges for Jobbers Are Enlarged—Various Misunderstandings and Complications of Previous Rules Are Eliminated

WASHINGTON, Oct. 30.—Supplement No. 2 to Circular No. 4, just issued by the priorities board, represents one of the most important pronouncements yet made by the priorities authorities in the process of extending and elaborating the priority regulations of industry.

The circular repeals section 5, 7, 8, 9 and 23 of Circular No. 4, adds a paragraph to Section 14 of Circular No. 4 and repeals all of Supplement No. 1 to Circular No. 4.

One of the most important features of the new supplement is the extension of the list of defined purposes entitled to automatic priority rating. To facilitate the procedure covering the placing of a large number of orders entitled to automatic rating it is provided that instead of making separate affidavits to cover each order, a prescribed affidavit may be filed with each source of supply from whom the material will be ordered and then there may be attached to or stamped upon each purchase order a certification in a stipulated form. The use of a modified form of certification is prescribed where the order is entitled to the automatic A-5 rating under Section 7-A. The use of priority ratings by jobbers and of priority against jobbers where material is not in stock, is provided for. Many other points regarding previous priority regulations which have been misinterpreted or have seemed to be ambiguous have been clarified by the new circular.

Leading features of the new circular are given below:

Class C Defined

Sec. 5. Class C comprises all orders and work not covered by priority certificates issued by the priorities committee or not taking an automatic rating in accordance with the provisions of sections 7, 7-A, 7-B, 8 and 8-A hereof, which orders and work are placed by and are to be utilized in connection with an industry appearing on Preference List No. 2, promulgated and published by the priorities division under date of Sept. 3, 1918, and all amendments and substitutes therefor, or which orders and work are to be utilized in furtherance of one or more of the following purposes or uses:

(*a*) For the maintenance of existing equipment for the supply of heat, light, power and sanitation.

(*b*) For the necessary supplies and essential repairs (not extensions or replacements) to existing buildings and manufacturing plants.

(*c*) For drugs, medicines and medical and surgical supplies.

(*d*) For the operation of machine shops and blacksmith shops.

(*e*) For wire cloth for screening buildings.

(*f*) Nails, screws, rivets, bolts, nuts and washers for any purpose.

(*g*) Bale ties, including cotton and hay.

(*h*) For all necessary repairs to equipment, vehicles, implements and machinery of every nature whatsoever.

Automatic rating for War Department, Navy Department, United States Shipping Board Emergency Fleet Corporation, Bureau of Industrial Housing and Transportation, and United States Housing Corporation Orders.

SEC. 7. Each order placed by a duly authorized officer of the war department or of the navy department of the United States, or of the United States Shipping Board Emergency Fleet Corp., or of the bureau of industrial housing and transportation of the United States department of labor, or of the United States Housing Corp., which falls within Class A as defined in Section 3 of Circular No. 4, shall, by virtue of this rule, upon the placing of the order, automatically be classified as A-5, *provided* said order carries an endorsement personally signed by the officer placing the order reading:

Unless rerated by express order in writing by the priorities committee of the war industries board, this order is by authority of said priorities committee rated as class A-5, and its execution shall take precedence over all your orders and work of a lower classification to the extent necessary to insure delivery as prescribed by Circular No. 4, issued by the priorities division of the war industries board, of date July 1, 1918, and all amendments thereto.

Automatic Rating For Completion of Direct Orders From War Department, Navy Department, Emergency Fleet Corporation, Bureau of Industrial Housing and Transportation, and United States Housing Corporation.

Sec. 7A. Each order for materials, equipment (see section 9A), or supplies to be used in the manufacture of a product not of itself entitled to automatic rating under Section 8 of Circular No. 4 and amendments thereto, but required to complete a *direct order* from the war department, the navy department, the United States Shipping Board Emergency Fleet corporation, the bureau of industrial housing and transportation of the United States department of labor, or the United States Housing corporation, when such direct order is covered by an automatic A-5 rating under the provisions of Section 7, or is covered by priority certificate of class A-5 or higher rating, shall take automatic A-5 rating when supported by an affidavit in writing in the form following:

Unless rerated by express order in writing by the priorities committee of the war industries board, this order is by authority of said priorities committee rated as Class A-5 under and by virtue of Supplement No. 2 to Circular No. 4, issued by the priorities division of the war industries board of date Oct. 15, 1918.

For the purpose of securing the said rating I do solemnly swear—

(1) That I have taken and filed whatever pledge is required by the war industries board from the industry of which I am a member; and

(2) That the materials, equipment, or supplies covered by this order are intended for use and will be used for the purpose of completing an order placed with me directly by the

(Use whichever is applicable.)

United States war department.

United States navy department.

United States Shipping Board Emergency Fleet corporation.

Bureau of industrial housing and transportation of the United States department of labor.

United States Housing corporation.

And which bears automatic priority rating of class A-5, under the rules and regulations of the priorities committee of the war industries board, or, and which is covered by priority certificate No. ...., class A-....., issued by the priorities committee of the war industries board.

If the materials, equipments, or supplies are to be used in the manufacture of a product of itself entitled to an automatic rating under Section 8 of Circular No. 4 or amendments thereto, then the order will not be entitled to the automatic A-5 rating provided for herein, but instead will be entitled to the particular rating specified in Section 8 or amendments thereto.

The automatic A-5 rating herein provided shall apply only on orders placed by those holding contracts *direct* from the army, navy, United States Shipping Board Emergency Fleet corporation, bureau of industrial housing and transportation, and the United States Housing corporation. It does not apply to orders placed by subcontractors.

Automatic Rating For Orders Placed By Transportation, Telephone, and Telegraph Facilities.

Sec. 7-B. Each order placed by a duly authorized officer of a transportation facility under the jurisdiction of the United States railroad administration, or of a telegraph or telephone

company under the jurisdiction of the postmaster general of the United States, the materials, equipment, or supplies for the operation and maintenance of such transportation facility or such telegraph or telephone company, shall, by virtue of this rule, upon placing of the order, automatically be classified as B-1, provided such order carries an indorsement personally signed by such officer, reading:

Unless rerated by express order in writing by the priorities committee of the war industries board, this order is by authority of said priorities committee rated as class B-1 and its execution shall take precedence over all your orders and work of a lower classification to the extent necessary to insure delivery as prescribed by circular No. 4, issued by the priorities division of the war industries board, of date July 1, 1918, and all amendments thereto.

Automatic Ratings For Defined Purposes

SEC. 8. Each order for materials, equipment (see sec. 9A), or supplies for the purposes or uses hereinafter in this section mentioned shall, by virtue of this rule, automatically take a classification as herein prescribed, namely:

(*a*) For the manufacture of turbines (all classes)..... A-4

(*b*) For the repair or construction of locomotives for use on railroads under the jurisdiction of the United States railroad administration, for use of the United States military railroads, or for use by the allies in military operations A-4

(*c*) For the production of electrodes A-5

(*d*) For the manufacture of rope wire and of wire rope... A-5

(*e*) For the building of ships or other water craft for and under direct contracts with the United States army, the United States navy, or the United States Shipping Board Emergency Fleet corporation.. A-5

(*f*) For the building of all cargo water craft, including tugs, barges, and dredges (but not pleasure craft), save such as are under construction by or for the United States army, the United States navy, or the United States Shipping Board Emergency Fleet corporation B-1

(*g*) For the manufacture of machine tools for working both metal and wood; of machinists' tools, of small tools, of hand tools, and of mining tools, mining machinery, and mining equipment A-6

(*h*) For the manufacture of railroad materials, equipment, and supplies (other than locomotives) for use on the railroads under the jurisdiction of the United States railroad administration B-1

(*i*) For the manufacture of electric and hand-traveling cranes, shipyard cranes, track pile drivers, portable electric hoists, electric monorail hoists, grab buckets, I-beam trolleys and chain blocks, save such as are under construction for the United States army, the United States navy, or the United States Shipping Board Emergency Fleet Corporation (see also subdivisions (*ab*) and (*ac*) hereof) B-1

(*j*) For the manufacture of electrical equipment (excepting turbines) for the generation, distribution, and utilization of electrical energy for power, traction, and light, of radio apparatus, of electromedical apparatus, of electric welding apparatus, of electric furnaces, of electric signal and communicating systems, and of such supplies only as are essentially required in the installation or use of such electrical equipment or systems, on strict compliance with the provisions of this section and with the provisions of circular No. 53 issued by the priorities division of date Oct. 15, 1918..... B-2

(*k*) For the manufacture of farm implements B-2

(*l*) For the manufacture of textile machinery and textile machine supplies B-2

(*m*) For the manufacture of tools, implements, machinery and equipment required for the production, harvesting, distribution, milling, preserving, canning, and refining of fods and feeds..... B-2

(*n*) For the manufacture of binder twine and rope..... B-2

(*o*) For the manufacture of oil-well supplies or equipment —by which is meant supplies for the production of petroleum and natural gas —but not including pipe lines, storage tanks of 1000 barrels capacity or over, tank cars, or refineries (see also subdivision (*u*) hereof) B-2

(*p*) For the operation, repair, and maintenance (not including new construction, expansion, or materials entering into the finished product) of coke-oven plants, mines, ore-reduction plants, furnaces, rolling mills, wire-drawing mils, and pipe and tube mills, employed in the production of fuels, metals, and metal products, and for the operation, repair, and maintenance of benzol plants and toluol plants and for the operation, repair, and maintenance of plant railroads employed in plants named herein A-6

(*q*) For the manufacture of iron and steel chain and sprocket wheels B-2

(*r*) For the manufacture of repair parts to shoe machinery and for the operation and maintenance (not new construction, expansion, or replacement, or materials entering into the finished product) of shoe manufacturing plants B-2

(*s*) For the maintenance of jobbers' stocks of heavy hardware, farm implements, mining tools, mining machinery and mining equipment, and similar iron and steel products, to the extent of quantities delivered during the preceding month for uses entitled to preference treatment as from time to time determined by the priorities division, upon compliance with the conditions of this section, and of section 9D, subdivisions (*a*) and (*b*) of this circular..... B-4

(*t*) The automatic rating heretofore provided for in this subdivision for the maintenance of stocks of fabricators of steel is hereby discontinued. Fabricators may, however, make application for priority assistance on the regular form, Form P. C. 15.

(*u*) For the production of, and for the obtaining of stocks to be distributed for the production of, petroleum and natural gas, including essential repairs and supplies for maintenance of existing pipe lines, storage tanks, tank cars, and refineries, but not including materials, equipment, or supplies for new construction, extension, or replacement of pipe lines, storage tanks of 1000 barrels capacity or over, tank cars, refineries (see also subdivision (*o*) hereof..... B2

(*v*) For the manufacture of telephonic and telegraphic instruments and equipment for use in connection with the military program.... A-4

(*w*) For the manufacture of marine equipment to be installed in ships or other water craft (save pleasure craft) A-6

(*x*) For the manufacture of steam condensers A-6

(*y*) For the manufacture of high-pressure boilers, superheaters and circulating pumps B-1

(*z*) For the manufacture of automatic stokers B-2

(*aa*) For repairs to gas, light, water and power plants operated as public utilities. A-5

(*ab*) For the manufacture of locomotive cranes, including raised pier, portal pier,

(*Concluded on Page* 1004)

Cancels Big Shipbuilding Projects

Emergency Fleet Corporation Halts Building of Yards in East and West—Possibility of Early Peace Hinted as Cause, While Labor Shortage Also is Factor—Millions of Dollars of Equipment Annulled

NEW YORK, Oct. 29. (By wire.)—Cancellation of orders for many million dollars worth of equipment is resulting from the Emergency Fleet corporation's decision to abandon several large projects. Rumors that such action might be taken have been current for two weeks, but not until a few days ago when equipment builders were asked to prepare cancellation claims, did the fact become definitely established.

The largest project affected so far as known, is the Liberty yard of the Bethlehem Shipbuilding Corp., at Alameda, Cal., for which extensive contracts for machine tools and other equipment, as well as buildings, have been awarded. It is estimated that adjustments in this particular instance will cost from $8,000,000 to $10,000,000.

A dispatch from San Francisco says that work at the yard has been stopped after an expenditure of $2,500,000. Various reasons are assigned at the yards for the drastic action of the government, including the inability to secure sufficient land at the present site and continued labor trouble. The dispatch continues:

"Negotiations of the city of San Francisco with the Emergency Fleet corporation looking to the borrowing of $450,000 to finance the building of a combination steam and electric railway to the Hunter's Point drydock and shipyard of the Bethlehem Shipbuilding Corp. have also been broken off. When Mayor James Rolph, of San Francisco, returned from Philadelphia recently, where he had been called for a conference in connection with this matter, he stated that the Bethlehem Shipbuilding Corp. and the Emergency Fleet corporation were unable to reach an agreement as to which of them should advance the money for the project. Under the proposed terms the city was to borrow the money to finance the enterprise and repay the amount borrowed, less depreciation, within two years after the conclusion of hostilities."

Other projects which have been abandoned include a boiler plant which was to be erected for the government near Perth Amboy, N. J., by the Barber Asphalt Paving Co., and a large extension at the New York Shipbuilding Co. plant at Camden. Abandonment of all these undertakings is believed to be due chiefly to a severe labor shortage. In some quarters it also has been interpreted as due to the possibility of early peace, but those opposing this theory point to the fact that the Emergency Fleet corporation is the only governmental department taking such action, and that the government's shell and gun program continues to be carried out on a larger scale than ever.

Some machine tool builders affected by this cancellation state they will make claims for settlement for only special machinery as they can apply standard machines to other orders. The position of electric crane builders and makers of other special equipment, however, is different and adjustment in these cases will be much heavier.

By-Product Plant

In Providence, R. I., to Be Completed in December—Has 40 Ovens

A considerable addition to New England's supply of foundry coke is promised by the early part of December through the completion of the new by-product coke plant which the Koppers Co., Pittsburgh, is constructing for the Providence Gas Co., Providence, R. I. When construction started it was expected the plant would be finished and in operation by Oct. 1, but as a result of delays in the arrival of materials the work was set back.

The plant, which will consist of one battery of 40 ovens of the cross regenerative combination type, is designed to operate on coal gas, producer gas or both. The ovens are 40 feet long, 10 feet high and 15¾ inches wide. The daily carbonizing capacity of the plant is 750 tons of coal, from which it is estimated that 500 tons of coke will be secured. A mixture of high and low volatile coal will be used and each oven will take a charge of 11.4 tons. It is proposed to run the ovens at a temperature of 2100 degrees Fahr. and to make drawings every 16 hours.

It also is proposed by the company to specialize in foundry coke, with a guarantee of less than 1 per cent sulphur. In view of the fact the railroad administration does not permit of the shipment of coke produced in New England outside the boundaries of that section and does not permit of shipments from outside regions into New England, the business of the company for the present must be confined to that section. The entire production will be under the management of W. G. Rich, general sales agent of the company.

Reconstruction

Problems to Be Discussed at Conference in Atlantic City

Washington, Oct. 28.—President Wheeler, of the Chamber of Commerce of the United States, has issued a call for a "war emergency and reconstruction conference" to be held on the Million Dollar pier, Atlantic City, Dec. 4, 5 and 6. War service committees, which now represent 300 separate industries, have been asked to attend the conference.

The call states that the conference will be addressed by the best authorities who can be obtained and "will determine what form of working federation will be adopted to assure largest present usefulness and greatest future safety to American commerce."

It is pointed out that all the war service committees have been forced to cope with certain common problems which may be considered jointly and that the non-war industries have also to face their problems, which as regards to fundamentals, have a similarity. The purpose of the conference is to discuss the general problems of both and jointly "to face squarely and constructively the reconstruction period and be ready through accurate and exhaustive study and marshalling of facts to lay before such governmental agencies as may be created to deal with reconstruction the necessary data bearing upon this subject."

The meeting will bring together from 2000 to 3000 industrial leaders. National councillors of the chamber, representing more than 1100 commercial and industrial organizations which comprise its membership, will meet at the same time and place.

The main purposes of the conferences will be the determination of practical methods whereby industry may co-operate still more closely with the government through a more centralized scheme of organization. It is believed this can be accomplished best by the creation of a federation of all the war service committees.

For nearly a year the chamber has been engaged in directing the organization of war service committees in all lines of industry to assist the government in mobilizing the country's industries for prosecution of the war. It is evident that, however far away the end of the war may be, it is necessary to begin to outline a general program of organizing business for the period of reconstruction.

Speakers who already have accepted invitations to appear include Secretary of Commerce William C. Redfield, A. C. Bedford, James A. Farrell and Paul Warburg. The conferences will include general sessions at which questions common to all industries will be taken up, sessions of committees within particular industries at which specific industrial problems will be discussed, meetings of related war service committee groups, and conferences of individual war service committees.

Joins Iron Section

Bertham S. Stephenson, Pittsburgh agent for M. A. Hanna & Co., has become associated with the pig iron section of the war industries board at Washington.

Strike Cripples British Ironworks

Railroad Men Quit Work Four Days, Reducing Coal Output Hundreds of Thousands of Tons—Consumers Obtain Larger Supplies of Forge Iron—Foundries Busy—Exports at Lowest Ebb

Bureau of THE IRON TRADE REVIEW.
Prince's Chambers, Corporation St.,
Birmingham, Eng., Sept. 28.

THE scarcity of pig iron has been increased recently as the result of another of those strikes which have been a constant thorn in the side of this country during the war. The railway strike which lasted four days was responsible for a reduction of 250,000 tons of coal in the output in South Wales alone.

Blast furnaces carry very little stocks of fuel or other material, and a rather extensive stoppage on the Great Western railway immediately put the furnaces in difficulties. Fortunately, the iron trade has been receiving special attention from the coal controller so that the pinch of scarcity was not quite so keen as it would have been a fortnight ago. The railways are now resuming operations and dependent industries will be able to go on, but coke merchants whose supplies have been very short look for the effect of this strike to be felt for some weeks.

As the end of the quarter approaches consumers are hurrying up their pig iron orders and inquiries with a view to fresh bookings. They are likely to be in a better position in the matter of forge iron than they were in July. This material is much more plentiful than it was, chiefly because of the larger proportion of inferior quality of iron turned out, especially white iron of which an undue proportion is coming on the market. To some extent the trade has to blame the wet weather for reducing the quality and the heating value of the coal, for this poor return from the furnaces.

Foundry Pig Iron Still Short

The foundry pig iron department shows no improvement in supply in any part of the country. There is little to be spared for ordinary purposes and it is difficult to meet the large demands of the foundries producing castings for battleships, merchant ships, and heavy machinery. It will be readily understood that the demands on the trade under this head are very heavy just now. The efforts to increase the production of pig iron have been unsuccessful, and the fuel shortage has made it difficult for the furnaces to maintain anything like an average. In the north of England it is within the range of possibility that some of the steelworks will have to cut down their production for want of raw material.

Certain rumors exaggerating the improved supplies of forge iron encouraged midland buyers to open a campaign for reduced prices. It appears to have met with no success, makers without exception offering strong resistance. Smelters are not comfortable as to future prospects as to costs. Fuel charges are not likely to decrease while the unrest among the men indicates further additions to the cost of labor.

A claim has recently been put in to the ministry of munitions by blast furnace men for double time for Sunday work, with increased charges for overtime. This is a new idea, inasmuch as work at the blast furnace has been regarded as continuous and wages have been paid accordingly. But as ordinary workers in the engineering department have been applying with more or less success for double time on Sunday the blast furnacemen have been encouraged to follow the example. The smelters also look to pay increased wages under the sliding scale on the next price adjustment by both of the northern and midland wage boards which is to be issued soon. The general expectation is that the average selling price will be found to have increased sufficiently to give all ironworkers a small advance. Improvement in the shipping situation has enabled heavier parcels to be sent from the Cleveland district to our allies. This is partly accountable for the inability of many English users to get all the iron they want, and it is expected that some of the allotments in the Cleveland district will have to be cancelled at the end of the month owing to the inability of producers to fulfill their commitments.

The worst effects of the railway strike were concentrated over the South Staffordshire area. All the works there have been making short time lately because of fuel scarcity and the strike temporarily closed some of them. Many rolling-down mills in the district take their steel billets and half-finished bars from South Wales. The strike happened to cover just the important strip of railway line operating between the two districts.

Government orders flow in steadily and makers are met with an overwhelming demand in nearly all lines. The sheet trade between here and France is a growing business, the American army finding it convenient to utilize British sheets for its huts. The airplane business has become a vast industry, and, here again, the light sheet trade is divided between this district and South Wales. Any quantity of metal fitments both ferrous and nonferrous are made at Birmingham. There is a big demand for nut and bolt iron especially in ⅜-inch and ½-inch sizes. The ordinary price for this is £15 5d 6s ($73.32) but as this material is not controlled makers have found no difficulty in getting up to £15 15d ($75.60). Merchants complain that general and miscellaneous orders not strictly definable as war orders get no attention.

One result of the fall in the price of tin has been a reduction of 1½d (3c) in the basic price of tinplates in accordance with the scale. This makes the current rate 32s 4½d ($7.77) net at works. The output is sold forward practically to the end of the year.

In the steel trade Glasgow, which is mainly concerned with shipbuilding, is finding the heaviest demand. All the Clyde works have more to do than they can execute and works are running to their fullest capacity. It has been found possible, however, to make some increase in the export of material to the allies. Sheffield steelmakers are not altogether happy over the state of their trade. All plants engaged on steel for shell and guns are fully employed, and notwithstanding the enormous increase in capacity of the open-hearth furnaces the production is fully absorbed. There is a marked shrinkage in the demand for crucible and tool steel, and in this line makers would be glad to undertake more export work if the authorities would grant more export licenses. Foreign buyers who have been neglected for a long time past would be pleased also to come once more into the picture. It has been found possible to increase the supply of railway steel. Rails on the general arteries of traffic and tram lines in the big cities are getting badly worn. In some cities the state of the rails makes tramway traffic dangerous.

Foundries Busy

The foundries are exceptionally busy. Enormous quantities of heavy rolls have been produced, a fair proportion having been bought for France and Italy. The reports of August trade just issued show once more that our export business of iron, steel and manufactures thereof is a disappearing quantity. The total exported during August was 161,-855 tons as compared with 214,290 tons a year ago. During the eight months of the year the figures show a decline of 600,000 tons and compared with two years ago of 1,300,000 tons. Manufactured steel in bars, rods, shapes and sections yields the smallest total during the whole period of the war, namely 10,500 tons. This compares with a total in August last year of 52,594 tons. No puddled bars, sheet or tin plate bars are coming into the country and the total import of finished steel was 2663 tons compared with 13,130 tons.

The ministry of munitions has approved the agreement of the Sheffield Engineering Trades Employers' association and the Iron and Steel Trades confederation that members of the confederation employed in the iron and steel trades shall be paid additional war bonuses of 5s ($1.20) for workmen now in receipt of 30s ($7.20) a week war bonus; 4s 6d ($1.80) to those with 28s ($6.72) war bonus, and 4s (96c) to those with 25s ($6) war bonus. The agreement is retroactive to Aug. 10.

The wages boards have been considering the increase of war bonuses necessary because of the increased cost of living and the natural discontent of the men arising from the liberal payments to other classes of workmen. The midland wages board has prepared a scheme for submission to the ministry of munitions which it is hoped will result in an entirely amicable settlement of wage matters for some time.

New Priority Regulations

(*Concluded from Page* 1001)

and gantry types and wrecking cranes, save such as are under construction for the United States army, the United States navy or the United States Shipping Board and Emergency Fleet Corp. (see also subdivisions (*i*) and (*ac*) hereof) A-6

(*ac*) For the manufacture of all types of cranes listed in subdivisions (*i*) and (*ab*) above, when for and under direct contract with the United States army, the United States navy, or the United States Shipping Board Emergency Fleet Corp. A-5

(*ad*) For the operation, repair and maintenance (not including new construction, expansion, or raw materials entering into the finished product) of plants manufacturing chlorine, calcium carbide, acetylene, oxygen, hydrogen, and hydrocarbon gases, apparatus employed in their utilization, and shipping containers therefor A-6

(*ae*) For the operation, repair and maintenance (not including new construction, expansion, or raw materials entering into the finished product) of plants manufacturing textiles, including all processes of manufacturing B-2

(*af*) For the maintenance of jobbers' stocks of the following iron and steel products, other than as provided for in subdivision (*ag*) hereof; sheared, universal mill rolled and floor plates; blue annealed, galvanized, one pass cold rolled, and full cold-rolled sheets, formed roofing and siding and special finish sheets of all kinds; hot-rolled bars and small shapes, cold-rolled shafting, iron bars, concrete reinforcing bars, toe calk steel, spring steel, tire steel, hot-rolled strip steel, hoops, bands and rails; angles, channels, beams, tee bars and other structural shapes; wrought-iron pipe, steel pipe, boiler tubes, mechanical tubing; rolled and drawn wire; wire rope; cold-rolled strip steel; and tool steel; and other similar iron or steel rolled products not of a manufactured nature; upon strict compliance with the conditions prescribed in this section and in section 9D hereof..... B-4

(*ag*) For the maintenance of jobbers' stocks of iron or steel products enumerated in subdivision (*af*) above, when intended for use exclusively for purposes for which automatic classifications of A-6 or higher rating are provided in Circular No. 4 of the Priorities Division, and amendments thereto, or for use to complete orders covered by priority certificates of A-6 or higher rating, upon strict compliance with the conditions of this section and of Section 9D hereof..... A-6

No order shall take an automatic classification under the provisions of this section save where the person intending to use the materials, equipment or supplies ordered states under oath in writing that they are to be used for one or more of the purposes mentioned in this section and for no other purpose; which affidavit shall be endorsed on or attached to the order and shall be in the form following:

(*Affidavit Follows*)

Automatic Rating for Certain Repairs

SEC. 8A. As it is in the public interest that existing facilities should be operated without interruption and also that existing equipment should be repaired rather than new equipment constructed, each order for the repair of, and each order for materials, equipment (see Section 9A), or supplies for necessary repairs to, a product for the manufacture or production of which an automatic rating is provided in Section 8, and all amendments thereto, shall be entitled to an automatic priority rating one point higher than is provided for the manufacture or production of the product itself. The affidavit provided in Section 8 should in such case refer both to this section and to the subdivision of Section 8 providing the automatic rating for the manufacture of the product.

Interpretation of "Materials and Equipment"

Sec. 9A. The term "materials and equipment" as used in the first line of section 7A, 8 and 9 and the fifth line of section 8A, shall be taken to mean only such materials and equipment as enter into the product itself as a component part thereof.

Limitation On Use of Automatic Ratings

Sec. 9C. The automatic ratings apply only on orders placed by those manufacturing or producing the products specifically mentioned as entitled to the automatic ratings. They do not apply to orders placed by subcontractors of such concerns as are manufacturing products entitled to the automatic ratings.

Industry Priority Certificates

Sec. 9E. The priorities division has issued and is from time to time issuing circulars dealing with certain industries as a whole, and providing allotments of materials for the entire industry. Where such action has been taken the priorities committee, on proper showing, issues what is designated as an industry priority certificate, which entitles the concern to whom the certificate is issued to order and purchase the quantity of material specified in the certificate, and allows on such orders a designated priority rating. To secure the rating under an industry priority certificate, the concern entitled to the rating must accompany its order by an affidavit. The form of affidavit then is given.

Manufacturers and producers in receiving orders accompanied by affidavits as above set out should rate such orders in accordance with the automatic rating designated in the affidavit.

Priority On Export Orders

Sec. 9F. No application should be made to the priorities committee for the issuance of priority certificates on materials for export on which export licenses are required. The only application necessary in such cases is the application to the war trade board for the issuance of an export license. The war trade board will confer with the priorities committee and if an export license issues it will carry with it such priority rating as may be determined by the priorities committee. Application for priority certificates may, however, be made on orders for materials for export for the delivery of which priority may be needed and on which no export licenses are required. Automatic priority ratings do not apply on orders for export.

No order for special manufacture of any article intended for export shall be placed or accepted until an export license covering same has issued.

Rule Regarding Delivery Dates

Sec. 14A. Priority on an order is administered only after the order has been accepted by the manufacturer or producer. In accepting an order the manufacturer or producer should not agree on a delivery date which will interfere with the delivery of any orders covered by priority ratings of class AA, class A, or class B. This applies even though the party placing the orders would be entitled to an automatic rating thereon. Priority ratings are designed to hold delivery dates contracted for or delivery dates specifically provided for in priority certificates. If an earlier delivery than that promised is needed and the public interest would be served by providing therefor, then application should be made to the priorities committee on the regular application form (Form P. C. 15), requesting the issuance of a priority certificate calling for the delivery date required, and setting forth the reasons justifying the displacement of existing orders.

Priority For Jobbers

It is provided before a jobber may use the automatic ratings provided for in Section 8, subdivisions (*s*), (*af*) or (*ag*) he must file his customary pledge with the priorities committee and take the pledge from his customer. He then must show in his monthly report to the steel director the tonnage on which he is entitled to place the A-6 rating for replacement and the tonnage on which he is entitled to the B-4 rating.

Where priority is sought on orders placed through a jobber or agent it is limited to materials and quantities not held in stock by the jobber or agent and which are for direct shipment by the producer or manufacturer to the actual users of the materials.

Making Pressed Steel Car Wheels—I

Rotary Shear Cuts Section From Hot Steel Bar—Enormous Bearings Are Required to Take Up Thrust—Mill Particularly Adapted to Roll a Variety of Annular Shapes

BY GEORGE E. THACKRAY

IN the early days of steam railroading in the United States, which began about 1828, car and locomotive wheels were made of cast and wrought iron. Later when it became necessary to provide for heavier loads on the car wheels with less wear, the treads and insides of the flanges of these wheels were chilled by casting them against metal chill rings, the other parts of the mold being of sand. This method was first practiced about 1829 by Jonathan Bonney at Mount Savage, Md., for the Baltimore & Ohio railroad. Since that time many improvements have been made in chilled cast-iron wheels and all the older and lighter cars have been equipped with such.

However, upon the advent of the 50-ton car carrying a total load of 140,000 to 150,000 pounds, chilled-iron wheels, notwithstanding all the improvements in their manufacture, proved inefficient, especially with respect to shelling of the tread and breaking of the flange. This was due to the severe use to which they were put. A few heavier special cars are now made which carry a load of 75 to 125 tons in addition to the weight of the car, but these are supported on six-wheel trucks, that is, 12 solid-rolled steel wheels per car.

As time went on, air brakes were introduced. Under certain conditions, they cause excessive heating of the tread portions and when applied with great force, the wheels slide on the track, thus burning the treads in spots. With the use of the automatic safety coupler, longer and heavier trains were hauled, heavier cars were built and steel rails were made heavier. This type of rail caused more shock in some respects on the rolling stock consequently the car bodies were built much heavier and their framing correspondingly more rigid. As a result of the progress made in car building the average speed of freight trains was increased. Some of the fast freight trains now operate on a schedule almost equal to passenger schedules. The foregoing statements give some idea as to why better car wheels were required.

In England and Europe, car wheels were and are generally made with cast or wrought iron or steel centers, and with hard steel tires secured thereto by various forms of fastenings. Various methods and different kinds of machinery have been proposed for making solid wrought-iron or steel wheels. The earliest method used for making the wheels was by forging from a heated blank in dies of different forms, by means of hammers or power presses. One of the common types of wheels used in Continental Europe consists of a wrought-iron or steel hub, the spokes of which are forged integral therewith and with a rim welded or otherwise secured thereto and a tire fastened to the rim by various means. Many solid iron or so-called laminated iron, and also steel centers for car and locomotive wheels have been made in Europe for many years by different methods in the various iron and steel works; but, generally speaking, the European manufacturers did not produce a solid wheel with integral flanges. The tires were separate and secured to the wheel centers by various forms of fastenings as previously stated.

Attempts were made in this country and elsewhere about 30 years ago, to manufacture wheels of cast steel, the hub and web of which were cast of finished size and the tread was supposed to be condensed and finished by rolling. Among the first solid rolled steel wheels which were made in the United States, were formed about 15 years ago from a flat slab of steel the blank being punched or pressed into a flat cylindrical form and then finished in a rolling mill. They were an adaptation of Continental European types of rolled wheel centers, but with integral tread and flanges. While this produces a good wheel, the structure of the steel naturally varies throughout the circumference, due to the fact that it is rolled from a flat slab. Consequently such wheels are not best adapted to withstand the severe services to which they are subjected, especially with the present tendencies to increasing wheel loads and speeds. Other car wheels were made by forging small ingots or from blanks or sections cut from longer ingots, and sometimes finishing the tread and rim in what is known as tread rolls.

Recognizing all the difficulties encountered in the manufacture of steel wheels and the severe requirements they have to withstand, E. E. Slick, vice

The author, George E. Thackray, is special engineer for the Cambria Steel Co., Johnstown, Pa.

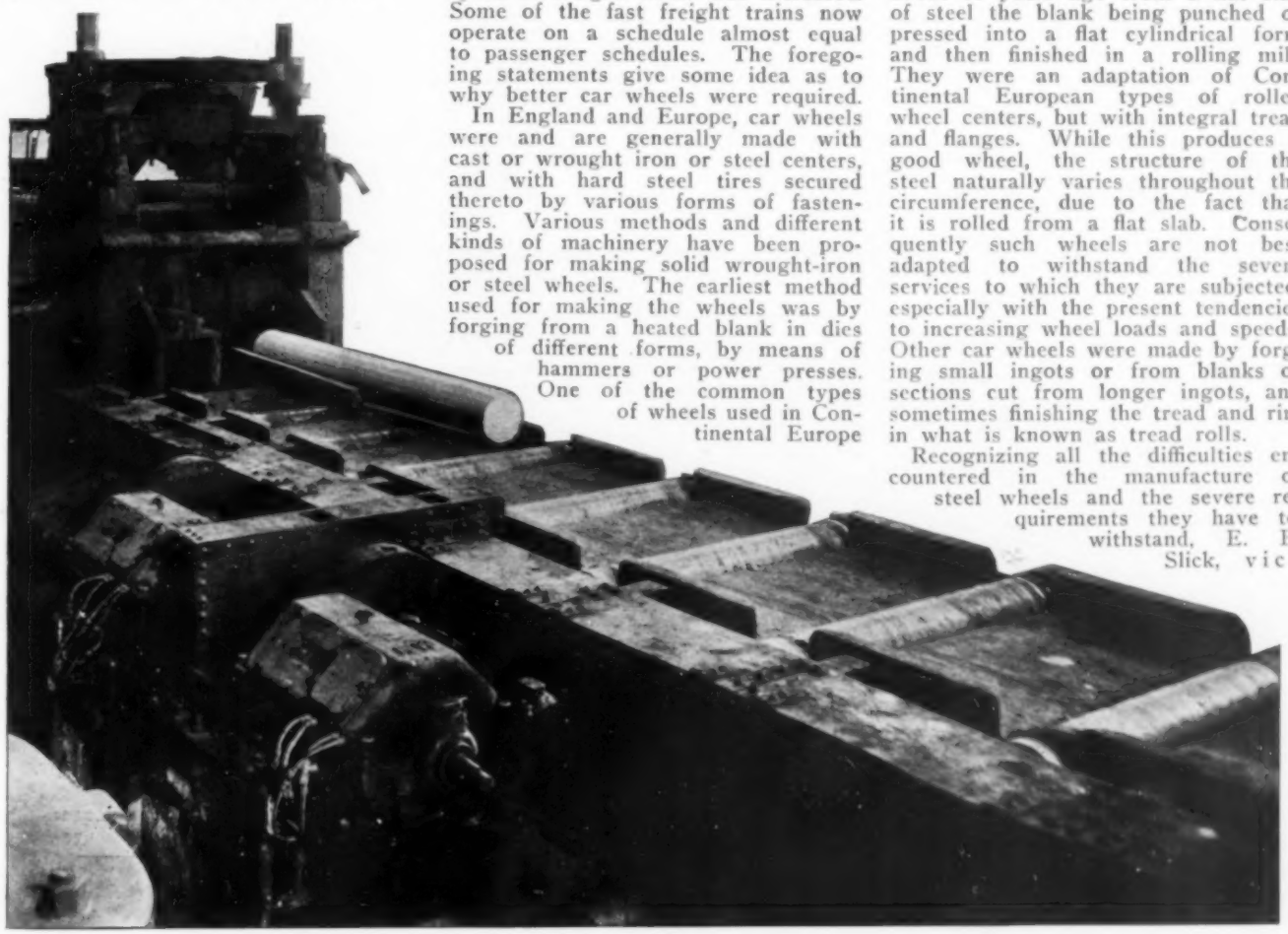


FIG. 1—32-INCH MILL FOR ROLLING ROUND BARS FROM WHICH SECTIONS ARE CUT FOR WHEEL BLANKS

FIG. 2—BAR ABOUT TO BE CUT INTO SECTIONS BY ROTARY SHEAR OF SPECIAL DESIGN

president and general manager of the Midvale Steel & Ordnance Co., produced a rolled-steel wheel by a method radically different from any which had been proposed. Instead of using a slab, a standard-size ingot is rolled on a large 2-high mill shown in Fig. 1 into a cylindrical bar, 11 to 20 inches in diameter. The bar is delivered to a rotary shear which cuts it into sections of various sizes and weights. The sections are then finished into a wheel or gear blank or other cylindrical form. A wheel blank produced by the foregoing method has the outer cylindrical surface of uniform composition and the various portions of the steel arranged in radial relation, thereby providing an ideal beginning for the manufacture of wheels. The rotary shear devised by Mr. Slick replaced older methods such as using flat slab blanks, short ingots or longer ingots cut cold into blanks in a lathe and replaced the older methods and machines at the Carnegie and Schoen wheel plants and the Midvale wheel plant when the latter was removed to Johnstown, Pa. The blanks are then placed in a heating furnace, the temperature of which is increased gradually as is necessary for the high-carbon steel used in making the wheels. This is shown in Fig. 5. Between the furnace and the wheel mill proper is a piercing machine which inserts a short steel punch or mandrel part way into the center of the blank thus forming a cylindrical opening.

As the wheel is pressed and rolled in the wheel mill, this mandrel holds the blank centrally in position and at the same time forms the major portion of the length of the bore of the blank. The mandrel remains in the blank as it is rolled and withdrawn from the mill. The blanks are withdrawn one by one from the furnace and after having been pierced as previously mentioned, they are transferred to the wheel mill. The latter consists of a pair of dies, so arranged that the axis of one of the dies is at an angle to that of the other die. A hydraulic plunger of enormous size projects one die towards its companion die. A large electric motor which develops from 1000 to 2000 horsepower dependent on the size and amount of work to be done on the blank, is provided, for rotating one of the angularly disposed dies. This die by means of friction rotates the companion die and the blank the latter being clamped between them. Hydraulic pressure causes the blank to be shortened and assume the reverse form of the dies. The thrust of 3,000,000 pounds or more is taken up by large thrust bearings which are said to be the largest in the world. The forging method has the combined advantage of pressing and at the same time rolling the steel, which completely forms every portion of the blank into a wheel or other annular shape.

The time required to roll a blank into a wheel or other annular shape varies, depending upon the size of the blank and the kind of work to be done. The smaller sizes are made in approximately 20 seconds while the larger sizes require about one minute. In making wheels by this process the blank of steel is completely formed by rolling pressure. A small amount of excess steel projects out from the edge of the blank in the form of a fin. The latter is sheared off by rotary shears designed by Mr. Slick.

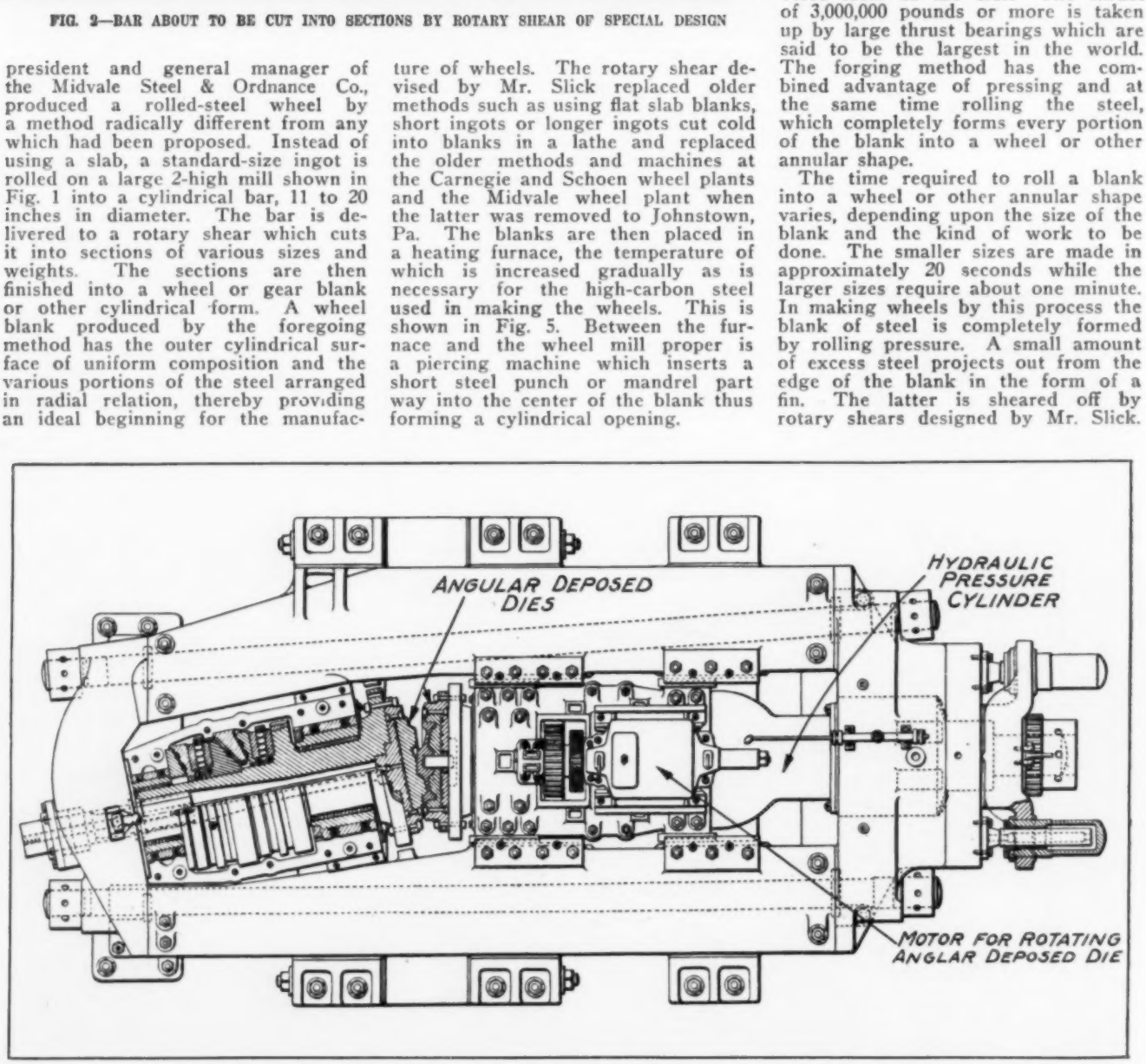


FIG. 3—AXES OF DIES ARE ARRANGED AT AN ANGLE. RIGHT DIE IS OPERATED HYDRAULICALLY

After the mandrel is pushed out, the punching of the bore is finished.

In addition to rolling freight, passenger, electric and other car wheels, the mill is also particularly adapted to roll gear blanks, automobile flywheels, and solid rolled-steel wheel centers to which separate tires are applied such as have been used in foreign countries for many years. In order to more clearly understand the Slick method and machinery used for rolling wheels and all kinds of circular blanks, a number of illustrations will accompany Part II of this article in the Nov. 7 issue of THE IRON TRADE REVIEW. The steel is transported from the open hearths to the pouring bay and poured into ingots. These are placed in soaking pits to equalize the temperature and then rolled into long cylindrical bars from 11 to 20 inches diameter. Fig. 1 shows a 32-inch mill designed for rolling round bars from which hot sections of cylindrical shape are cut for wheel blanks.

After leaving the mill shown in Fig. 1, the bar is passed to the rotary shear shown in Fig. 2. The shear-heads overhang and are driven by an engine connected to the central shaft, the pinion housing being at the left and the rotary-shear blades at the right. Fig. 4 shows the shape of the eccentric shear-knives clearly. Fig. 2 shows a round bar supported by rollers, ready to be moved forward to have a cylindrical wheel blank cut therefrom by the rotary shear.

The rotary shear shown in Fig. 2 is used for cutting off a blank from the end of a round bar which still has its initial heat as delivered from the mill. In making a cut the bar is supported on rollers and moves forward step by step. As the blanks are cut off in the form of short cylinders, they drop into a car or box below and are then lifted out by a crane. Each blank is cut in about 8 seconds. The rotary shear consists of two large disks arranged with their axes parallel. Each disk is made in two sections and is mounted on a 24-inch shaft. The shear blades proper being clamped between them by means of suitable bolts. The shear blades are made eccentrically. The disks are opposed to each other, but rotate in the same direction, thus making the disks and knives conform to the rotation of the bar to be cut.

Different sizes of disks are used to cut bars of different diameters, namely, disks 5 feet 1 inch diameter for 11-inch rounds, disks 4¾ feet diameter for 15-inch rounds, disks 4 2/3 feet diameter for 16-inch rounds, and corresponding sizes for bars of other diameters, varying from 11 to 20 inches in diameter. The round bar is carried on a longitudinal, long roller of large diameter, which supports it throughout its length. The roller is carried on pairs of idler rollers which are spaced at intervals throughout the length of the frame. The position of the rollers is shown at the left of Fig. 2 and the right of Fig. 4. The long carrying roller is adjustable to hold blank bars of different diameters in proper relative position for shearing. At the sides of and above the supporting roller are stationary guides. These are designed to make contact with the sides of the round bar as it is rotated for shearing; hold it against lateral movement; and, at the same time, guide the bar longitudinally while it is being moved forward for another cut. The bar as shown in Fig. 2

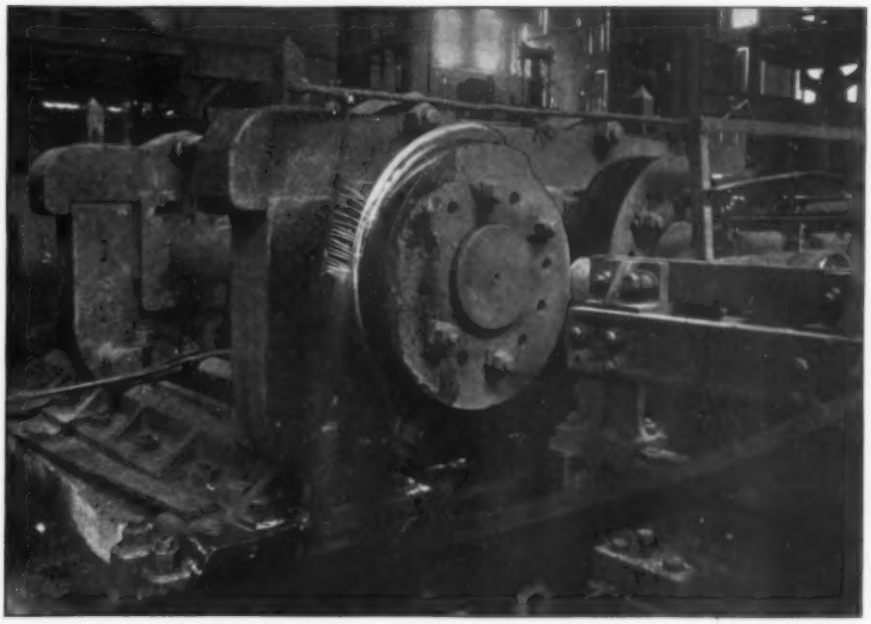


FIG. 4—SHAFTS TO WHICH THE SHEAR DISKS ARE ATTACHED ARE ADJUSTABLE

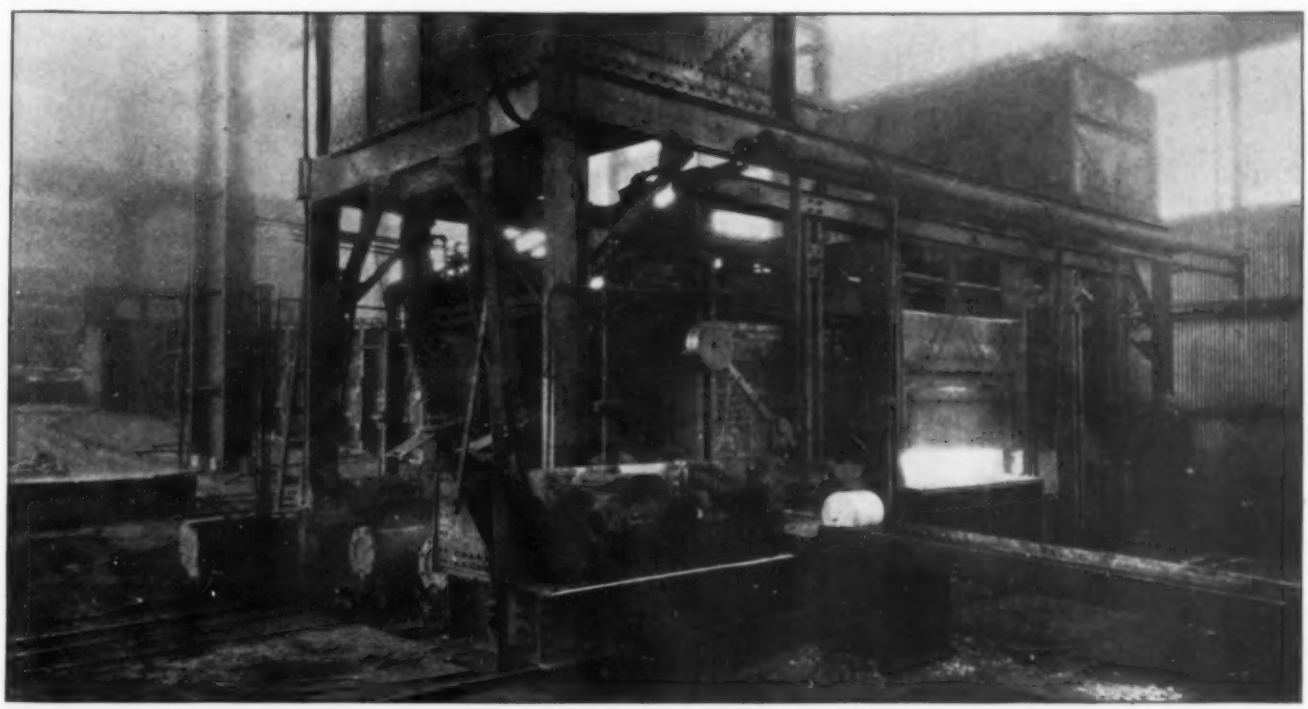


FIG. 5—WHEEL BLANK BEING DISCHARGED FROM CHARGING CAR ONTO AN INCLINED RUNWAY

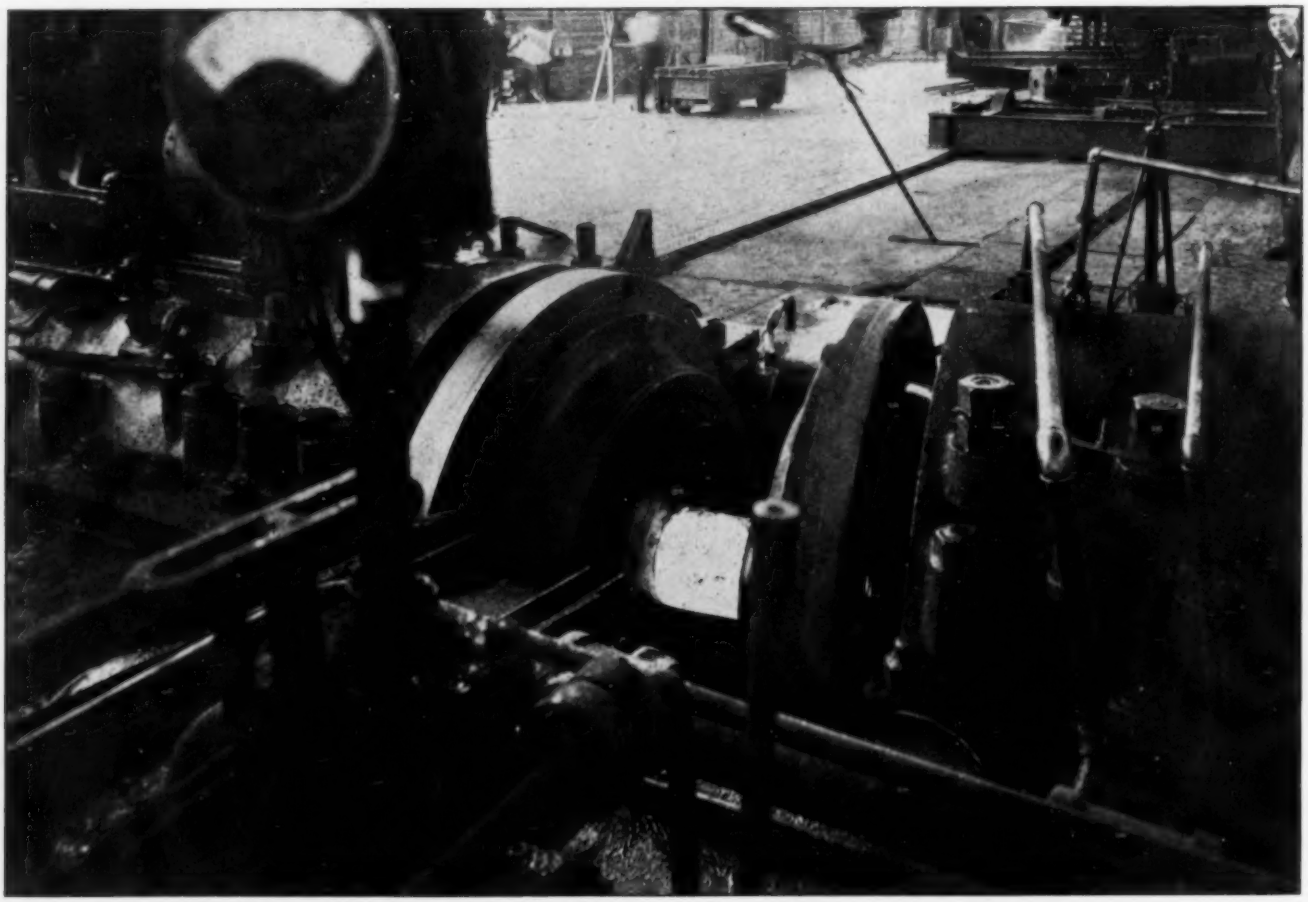


FIG. 6—WHEEL BLANK IN POSITION BETWEEN THE TWO ANNULAR DEPOSED DIES READY FOR ROLLING

FIG. 7—WHEEL BLANK AFTER ROLLING. NOTE CONSTRUCTION OF THE DIES, FACE-PLATE HOLDERS, ETC.

is first rolled on skids between these guides.

The roller which supports the bar before and during the shearing operation is connected through meshed gearing to an electric motor. After the blank has been cut by the rotary-shear knives, the bar is pushed between the side guides by means of a rotary pusher. The latter is mounted on one end of an I-beam which is traversed backward or forward longitudinally by means of a set of electrically-driven pinch rolls. The pusher head is mounted so as to rotate when engaged with the bar.

The shearing mechanism proper consists of the pairs of rotatable disks as previously mentioned, to which the eccentric shear knives are clamped. The shafts to which the disks are attached are adjustable in the housing to compensate for the various sizes of bars and the wear of the knives. Larger adjustments of the knives, however, are possible by using disks and shear blades of larger diameters, corresponding with the size of the bar to be sheared. The larger size of bar requires disks and knives of smaller diameter, and vice versa. A driving shaft approximately 24 inches in diameter is connected to each of these disks with their contained knives. On the end of each shaft is a side pinion which is driven from a central pinion mounted on the engine shaft.

A cupped cylindrical-shaped holder is provided to receive and guide the forward end of the bar as it is rotated and cut. This holder is adjustable and is mounted longitudinally. It can be projected or retracted by means of a pair of hydraulic plungers. An adiusting rod is attached to the spindle of the holder and projects through the frame so that it can be set to act as a gage to determine the length of the blank to be cut. During the shearing this holder is maintained in its forward position. However it may be retracted so as to drop the blank. This shear is driven either by means of a steam engine or an electric motor. The length of the shear proper is approximately 36 feet, the length of the feed apparatus 60 feet and the length of the engine shaft 17 feet. The width of the shearing machine is approximately 18 feet overall, the height 13⅔ feet above foundation and its weight approximately 850,000 pounds.

When a bar is to be sheared it is placed on the skids shown in Fig. 6 and rolled onto the supporting roller which is bounded by the side guides. The roller is then revolved in the direction of the rotation of the bar when being cut. The pusher then moves the bar forward until one end rests against the holder adjacent to the shear knives. The shear heads or disks rotate in an anti-clockwise direction. As the shafts rotate the eccentric knives gradually cut into the bar from diametrically opposite sides in a spiral form of cut. While being cut the bar is rotated both by the shear knives and the frictional driving action of the supporting roller.

The driving of the supporting roller is an important feature, especially toward the end of the operation, because when the bar is partially or almost cut off, the long and heavy end of the bar could not be rotated by the friction of the knives alone and the cut would be spoiled unless the body of the bar rotated independently and positively. When the blank is being cut the cupped holder guides the end of the bar in proper relation to the knives and holds the blank until it is severed from the main body of the bar. The holder is then retracted, the severed blank dropping into a car or steel box below. The pusher moves the bar forward the proper distance for the next shearing operation. The forward end of the bar slides between the disks at the time when the smaller diameters of the knives are opposite, until it strikes against the stopper or holder which acts as a gage. In this manner the blanks are cut with smooth ends to the exact size and weight. The runway from the furnace is operated by hydraulic cylinders. Fig. 5 shows a wheel blank being discharged from the charging car which operates in front of the furnace. The heated blank is transferred from the car onto an inclined runway and is delivered to the piercing press where a punch or mandrel is driven partly into the center of the blank. The blank is then delivered to the wheel mill and placed in position, as shown in Fig. 6. A general view of the wheel mill is shown on this page.

(Concluded in next issue)

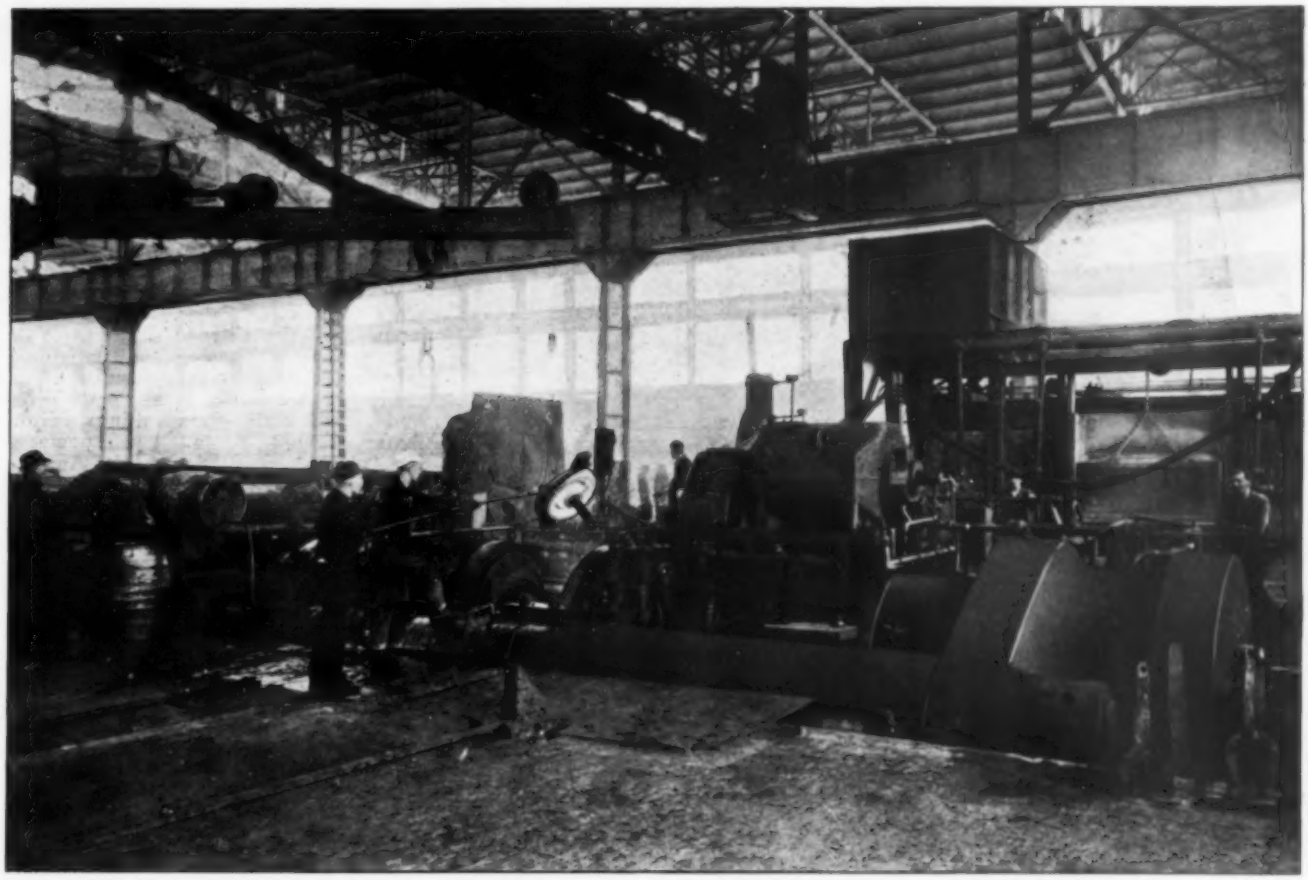
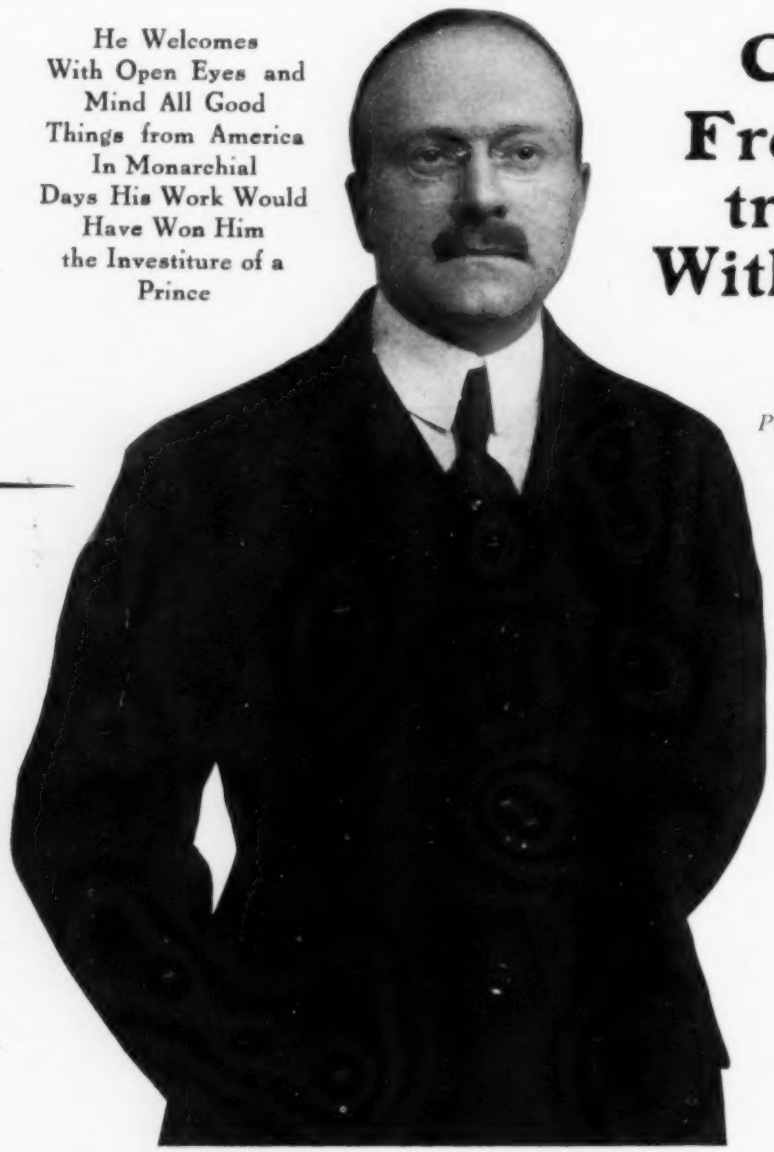


FIG. 8—WHEEL IS WITHDRAWN FROM THE MILL BY MEANS OF TONGS SUSPENDED FROM A JIB CRANE. HEATING FURNACE AT THE RIGHT

He Welcomes With Open Eyes and Mind All Good Things from America In Monarchial Days His Work Would Have Won Him the Investiture of a Prince



CITROEN: French Industrial Genius With American Ideas

BY FRANCIS MILTOUN

Paris Correspondent of The Iron Trade Review

ANDRÉ CITROEN is one of the pyrotechnical personalities of the French metal industry, but with this difference—he is not likely to fade away nor come down like a stick. His great Quai de Javel munitions plant grew up in a night like a mushroom but it, too, will be more enduring than the simile suggests.

On a half-sodden truck garden plot in a Paris suburb of before-the-war there has been erected one of the wonder constructions among modern metal-working plants in France, indeed in all the world. It was due to the genius of Citroen—there is but one; André is his first name, but it is seldom mentioned. He already had a highly successful business with its chief specialty a peculiar *engrenage*, or bevel-gear, applicable to machinery of all kinds, even the automobile. This was just previous to the war. At the time Citroen was recognized as *"le* coming-man," the phrase having insinuated itself into the French language; but he outdistanced even those who knew him best in his conception of the work to do and the will to do it.

It was in the early months of the war that Citroen received sufficient government aid which enabled him to take his established *usine* as a nucleus and make of it one of the most highly-productive munition plants in France today. It's great smokestacks belch forth their *fume'e* at all hours of the day and night on the Quai de Javel at Paris, just below Grenelle, under the heights of Saint Cloud, on the banks of the Seine, in full view of the miniature replica of Bartholdi's statue, "Liberty Enlightening the World." The juxtaposition is most significant.

Adopts American Ideas

Where the hot-beds and the glass forcing *cloches* of a suburban Paris truck-garden once grew radishes, cauliflowers and lettuce there has risen a steel-manipulating plant many acres in extent. And a model plant it is! It has even the hygienic bubble-drinking fountains of American origin, a rest-room for women workers, and a *crêche* for the babies of married women employed. There are thousands of women working here on fuses and shells and small and large ammunition of various kinds. The factory has adopted other American innovations such as electric delivery trucks, operated by women, transporting at a single time 200 of the famous "75" shells from one part of the factory to another as easily as a hand-drawn truck formerly moved 25, and that by the hard work of a man who might have been put to a more productive labor. This is the keynote of the Citroen organization—the proper utilization of individual capacities. Another American idea!

Citroen welcomes with open eyes and mind all good things from America, and when that spectacular "movie" film "America's Answer to the Hun" was first shown publicly in Paris, through the instrumentality of James Kerney, of the American committee on public information, Citroen lost no time in asking the privilege of having it shown *en famille*, as it were, before workmen and women in his factory that it might serve as psychological encouragement.

Since then, at the suggestion of Monsieur Loucher, the French minister of armament, who without doubt, will have a seat at the peace table when the negotiations with Germany come to pass, the film has been shown in the plants of many members of the Iron and Steel association, the *Comite' des Forges.* The last of these presentations was at the Creusot works in mid-France, and in the open air, there being no auditorium big enough to accommodate the 12,000 workmen assembled.

The Citroen establishment was the first munitions plant visited by General Pershing when he arrived in France, and later a banquet was given in the great refectory to Herbert C. Hoover, who the French call the "American food dictator." With Citroen and many of his fellows of the *Comite' des Forges* the alliance with the United States means a close bond of sympathy and commercial interest which is bound to be understood for all time in the relations of France and America.

The Citroen establishment is a group of specialized factories where the intensive application of each person employed is devoted to the one end in view, big-scale production, *en grande se'rie.* This does not mean haste or an undue, feverish energy but rather

an example of the application of La Fontaine's fable of the "Hare and the Tortoise." Not an *atelier* from one end of the factory to the other but what functions in a regular, orderly manner, and if not on a scale of a 100 per cent efficiency at least near thereto. The factory turns out a number of varieties of ammunition but confines itself within narrow limits and to quantity fabrication.

"For each object going through the factory we simply line up the list of operations, forging, shaping, tempering, turning, drilling and mounting," says M. Citroen. "When the natural sequence of all these operations has been established it is only necessary to line up the appropriate machine tools in their proper sequence and assign the proper personnel to the job in hand. This is the logical interpretation of the way to do things is by planning them out before hand."

If the formula sounds trivial and rudimentary as compared with the big conception of things in America it must be remembered that, previous to the war at least, France was a land of little things. It is true that there were some comparatively large industries, but even the well known iron and steel plants have had to go through this relaying-out process to cope with the work apportioned them by the government. It was the only way to produce results quickly and make up for the shortage of labor. With Citroen the case was different. He built practically from the ground up and did not have to suffer from the delaying process of transformation. As fast as equipment could be secured, largely American machine tools and others that he made in his own plant, another workshop was erected and put into operation. Today the main shop which made bevel gears before the war is but the trunk of a sturdy tree which branches out in all directions.

There has been a movement of late in France for the merging of many of the great industrial plants situated in the north and in the Paris area. Citroen's idea in planting his factory where he did was to go where the labor was; the workman dearly loves the city. It was this that enabled the plant to get to work quickly.

Then came a reaction. With a continually-increasing quantity of mobilized, specialist labor ordered back from the front, the government, still controlling the men, was able to send them where it liked. Now aside from the great establishments of Creusot and Saint Chamond in mid-France, on the route from Vichy to Lyon, there are other large plants scattered all through the center and south.

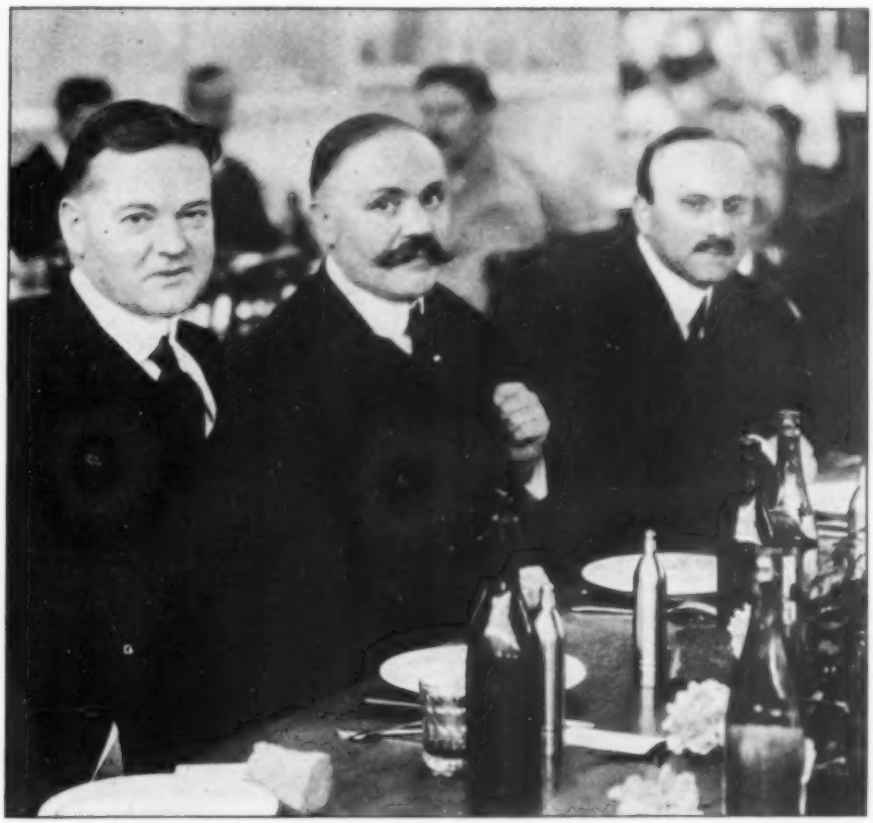
Citroen proposed to take over the half-moribund, government-established but not completed arsenal of Roanne, in the foothills of the Massif Central, and develop it on the same lines of his parent factory at Paris, specializing on big shell, on American lines.

As a result, *obus* are now being turned out at the rate of many thousands a day, as compared with hundreds; which is the vague way the military censor likes things of this nature stated. The Citroen touch again bids fair to revolutionize more than one phase of French industry.

Among the many nominations and promotions in the Legion of Honor the French government has just published the following: Monsieur Solon, Monsieur Craponne, Monsieur Jougla, mine directors in the department du Nord and Monsieur Ardin, journeyman plumber, attached to a chemical plant working for government account. Thus does the French government recognize capacity and devotion in the industrial world. One wonders what honorary recompense André Citroen will receive at some future time. In monarchial days he would have received the investiture of prince. He might well be made minister of industrial organization, a post yet to be created and one which the country will need after the war.

French Genius With American Ideas

WRITE it Francoamerican, without the hyphen; the union is complete. Such were the words of an enthusiastic French war correspondent after viewing the doughboys and poilus going over the top and listening to the encomiums of the French generals for the fighting spirit of the Americans. This "taking to the heart" of the Americans and Americanism by the French, however, has not been solely on the field of honor; a deep, abiding faith in Americans and Americanism is apparent throughout France and nowhere more so than in the French industrial world. French industrial leaders have endeavored to emulate American industrial practice in their own institutions; foremost among them being Andre Citroen, the head of the great munitions plant bearing his name. In this close-up sketch of Citroen he is represented as welcoming with open eyes and mind American ideas which proved their worth. Indeed, Citroen does not only welcome them; he goes after them. At the beginning of the war Citroen and other French manufacturers sent scores of picked men to the United States who, for months, studied American manufacturing methods which were later incorporated in their businesses and which have served to reorganize French industry on a higher and more efficient plane. Thus is manufacturing history written, in common with battlefield history, Francoamerican, without the hyphen.



Herbert C. Hoover, American food commissioner, (left) dining with Andre Citroen (right) and Monsieur Loucher, French minister of armament, at the Citroen munitions plant in Paris

Plan Picric Acid Plant

Stone & Webster, of Boston, have the contract for the $5,000,000 picric acid plant to be laid out at Kelloggsville, a suburb of Grand Rapids, Mich. The plant will have capacity for 5,000,000 pounds of acid a month, will be housed in 20 buildings and employ 2000 men. The Grand river will be harnessed for waterpower. Plans for the undertaking have been worked out under the supervision of army engineers, representatives of the Semet-Solvay Co., Dudley E. Waters, president of the Grand Rapids National City bank; Frank G. Row, president and Lee H. Bierce, secretary of the Association of Commerce.

Huge Machine Tools for Gun Plant

Single-Purpose Shell Turning and Boring Machines Completed for Neville Island Plant —Tool Holder Equipped With Cam Slots for Machining Both Straight and Curved Surfaces—Center Feed-Screw Arrangement

FOR use at the enormous gun-building plant of the United States Steel Corp., at Neville Island, Pa., two new types of single purpose shell turning and boring machines are being built by the Amalgamated Machinery Corp., Chicago.

These machines are of massive construction. All gears are steel. The screw feed for the carriage is in the center of the bed instead of at one side. Provision is made for using two tools simultaneously, one turning the straight portion, and the other the curved nose of the shell. The machines are designed to turn 12-inch, 14-inch, 16-inch and 18-inch shells, with provision made for 20-inch shells is that size is desired.

Massive in Size

The machines are practically identical, as to bed and headstock. The bed is 29.9 feet long, 5.25 feet wide and the turning machine has a 39-inch swing. The height of the headstock is 6 feet 8 inches. The bed is a solid piece, integral with the head. Both types are belt driven direct from a line shaft, doing away with the necessity of a countershaft, which is provided in the head. The belt drives a pulley 16 inches in diameter. The pulley has a 12-inch face and is provided with a friction clutch. The reduction gear is enclosed in the headstock and has four shifts, giving spindle speeds of 27.3 inches, 31.3 inches, 36.1 inches and 42 inches. These are designed to give a constant cutting speed for the four sizes of shells already mentioned, being based on the difference in circumference of the various sizes.

The spindle is driven by a gear at both front and rear, the face plate being a gear. These two gears are arranged with their teeth staggered in relation to each other and are driven by the same shaft. Bronze and steel multiple-disc thrust bearings are provided at the spindle and feed-screw bearings.

A split pulley 16 inches in diameter with a 6¾-inch face is driven by a belt from the main drive shaft, and is provided with a double friction clutch. This arrangement offers a rapid traverse for the carriage. The male part of the clutch operates with the feed-screw gear clutch and gives rapid motion in either direction through the feed screw. The carriage is not movable by hand as the rapid traverse and the regular feed provide sufficient variation for all practical purposes. Change in speed of the feed screw is made through gears in the headstock, which are readily accessible through a convenient door. The face plate carries a turned face with bolt holes for holding a jig or chuck. The ways are flat, machined on top and sides and overhang. The carriage is gibbed. On the turning machine, a master carriage is a permanent part with tongued grooves to carry an auxiliary carriage with tool holders set for various sizes of shell. The latter are bolted to the master carriage.

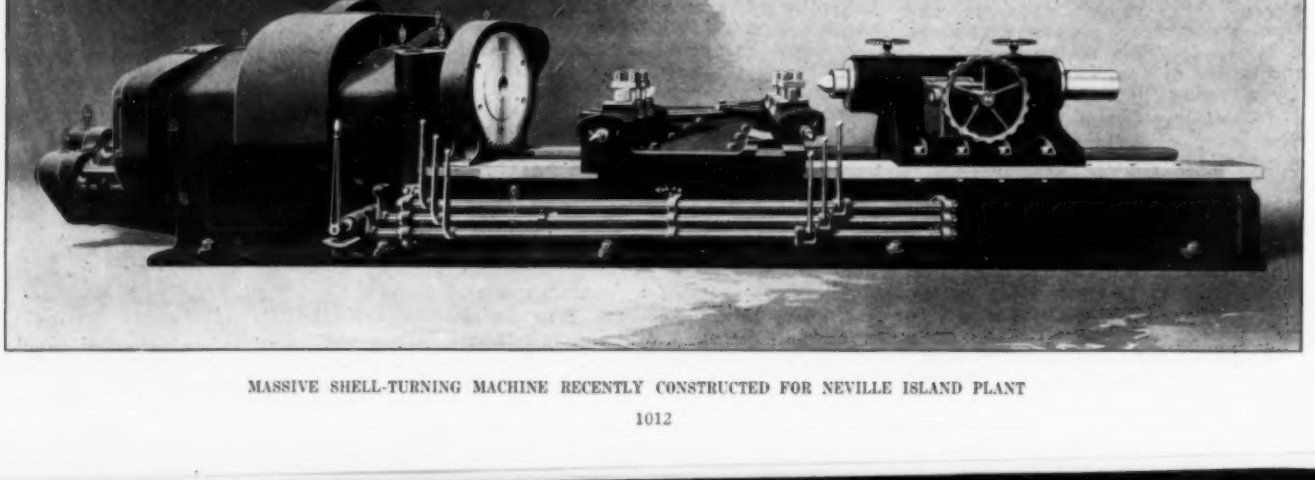
The auxiliary carriage is provided with two tools, one for turning the straight portion and the other the curved surface at the nose, at the same operation. The straight portion is slightly flared toward the base, the excess diameter being afterward swaged to the final dimensions in order to give a conical form to the central cavity, which is bored out cylindrically. Back of the carriage, rigidly fixed to the bed, is a forming attachment with two cam slots, one straight and slightly diagonal, controlling the tool turning the straight portion and the other curved and engaging the tool for the curved portion at two points. As the carriage travels, it carries the cutting tools, that for the curved surface being held at right angles to the surface at all times and obviating any necessity for the shells being turned in steps. The action of this curved cam slot is to carry the tool through an arc as though it were operated on a pivot.

The tailstock is bolted to the bed by eight bolts, 1½ inches in diameter, and can be moved forward or back for adjustment to several shell lengths. Spindles are 7 15/16 inches in diameter. The lever system of control is identical on the two machines and provides two sets of levers, one permanently mounted at the headstock, and the other mounted in a bracket and movable to conform to the length of shell being machined. Each set has three levers, operating the main clutch, the feed clutch and the rapid traverse, thus controlling all operations without the necessity of the operator moving from his position. An additional lever is provided to operate the four gear shifts which give changes in cutting speed.

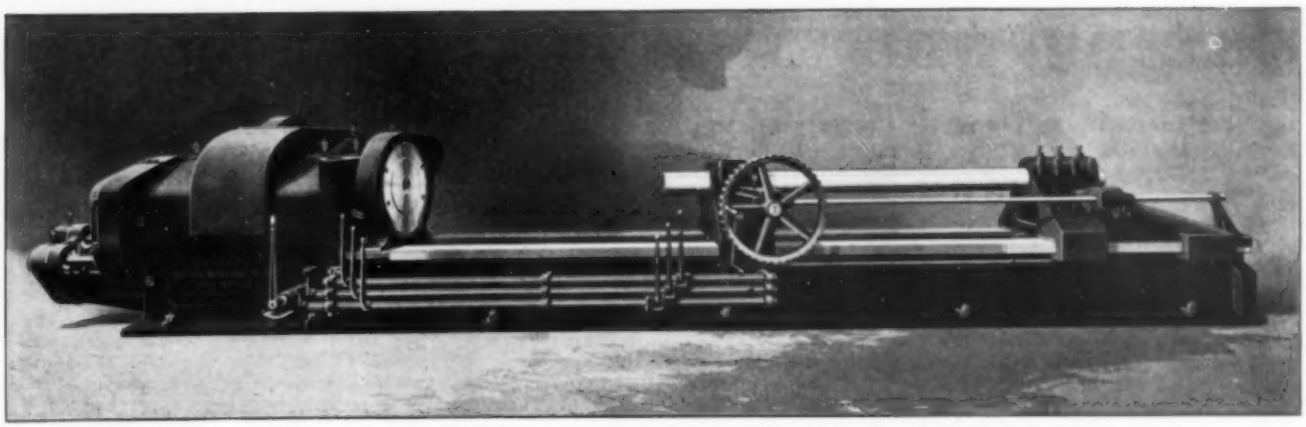
The boring machine is equipped with a boring bar 7 15/16 inches in diameter, 11½ feet long, supported at the front by a boring bar rest and at the rear by a carriage clamped and keyed to the bed. The boring bar guide is bushed. This guide or rest may be moved by the feed screw, a lever meshing a half nut when movement is desired.

Regulating the Cutting Speed

The carriage is driven by a nut on its underside, supported in a bearing in which it can be revolved. The nut is provided with a worm gear at one end, meshing with a worm, and by bevel gears and a shaft leading to a hand wheel close to the operator. By means of this hand wheel, the boring bar can be accelerated or slowed by the operator without leaving his work. In case the cutting seems too fast at any point, the operator can turn the hand wheel and counteract the feed of the screw to any degree desired by revolving the nut in the opposite direction. By reversing this action, the hand



MASSIVE SHELL-TURNING MACHINE RECENTLY CONSTRUCTED FOR NEVILLE ISLAND PLANT



BORING MACHINE DESIGNED TO HANDLE SHELLS UP TO 9 INCHES IN LENGTH

power may accelerate the cutting speed by revolving the nut in the same direction as the feed screw.

The tremendous thrust of the boring bar has a tendency to lift the forward end of the carriage. To provide greater rigidity the carriage is built with a lip fitted under the way, while the gib for taking up wear is placed above the way with adjustment screws operated from above. The boring bar is bored at its forward end for the taper shank of cutter heads or tools, which are fitted directly.

The shells to be machined are steel forgings, shaped approximately like the finished shell, but considerable material must be removed from both interior and exterior, giving heavy cuts in both operations. The shells may be bored from the base of the nose as desired. While it is not known exactly the length of the heaviest shell, the boring machine is built to handle shells up to about 9 feet in length.

The present order is for 168 machines, 96 being for boring purposes and 72 for turning. Deliveries are to begin within a short time.

Manganese Production in Arkansas in 1917

Manganese ore containing 40 per cent or more of manganese, mined in the United States in 1917, totaled 114,216 tons, of which the Batesville region of Arkansas, produced 8734 tons. This region also produced 9479 tons of ferruginous manganese ore during that year. The possibilities of a considerable increase in this region, are shown in a report recently issued by the department of the interior, following an investigation by H. D. Miser, of the United States geological survey.

Developed manganese deposits of the Batesville region, lie in a belt 20 miles long and from 4 to 8 miles wide, which extends northwestward through three counties in the northeastern part of Arkansas. Manganese is not found in every part of the belt. High grade manganese ores have been mined in the region since 1850, but the total production up until the present time has only been 65,261 tons of high grade manganese and 61,330 tons of ferruginous manganese ore. The production from practically every mine has been small, and in fact only 11 mines have produced more than 1000 tons of ore.

The ores are principally manganese oxides, and may be found separately. Generally two or more are mixed in the same deposit and at a few places they are associated with ferruginous manganese ores and with small quantities of brown and red iron oxides. Most of the high grade ore—that containing 40 per cent or more of manganese—and much of the low grade ore, are found in the residual clays of the lower limestones. The deposits vary in thickness. At most places they are only a few feet thick but at some mines they attain a maximum thickness of 80 feet. The high grade manganese ores of the region, generally contain from 45 to 52 per cent of manganese, though some of the ore shipped contains as much as 60 per cent. Most of the ores contain from 3 to 8 per cent of iron, 0.15 to 0.30 per cent phosphorus, and 2 to 8 per cent silica. Some of the ore shipped contains more than 0.30 percent of phosphorus and very little contains 0.40 to 0.50 per cent of phosphorus. Most of the ferruginous ores contain 20 to 40 per cent of manganese, 8 to 20 per cent of iron and 5 to 26 per cent of silica. The phosphorus content is about the same as that of the higher grade ore. The first grade ore at some of the mines, is hard and compact and contains 50 per cent or more of manganese; the second grade is porous, light and soft, though firm, and contains 30 to 35 per cent of manganese; and the lowest grade is light, earthy, and soft, and contains 20 to 25 per cent manganese.

The ores from this region are used for making ferromanganese, spiegeleisen, and high-manganese pig iron. Very little has been found suitable for chemical uses. The consumers of ore from this region are: The Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.; Miami Metals Co., Chicago; American Steel Foundries, Chicago; Southern Manganese Corp., Anniston, Ala.; Mississippi Valley Iron Co., St. Louis; Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.; Central Iron & Coal Co., Holt, Ala.; and the Sligo Furnace Co., St. Louis.

An estimate of the quantity of available manganese ore of all grades in this region, where mining is not preceded by systematic prospecting, is difficult to make. Of the 180 deposits examined about half contain an estimated available reserve of 200 tons or less. About one-third contain 1000 tons or more, and only a few contain more than 5000 tons, though certain of these contain many thousand tons. The deposits of the region perhaps include at least 250,000 tons of available ore containing 40 per cent or more manganese and 170,000 tons of available ore containing less.

Except at a few mines where machinery is employed, the ore is mined with picks and shovels. Production has been materially limited in past years because of poor facilities. Labor is also scarce. The region is capable of yielding much more than the present output of manganese and ferruginous manganese ores. Although the use of hand jigs and a great influx of laborers would help materially, the best way to increase the output will be to install more machinery, wherever the quantity and quality of the ore, the distance to water, the distance to railroads, and other factors will justify the expenditure.

Stresses in Frames

In analyzing the stresses in a rectangular frame, it is customary to assume that the connections are rigid. If the connections are not perfectly rigid, it is evident that the actual stress may not be equal to the computed stress. Tests to determine whether serious error is introduced into computations for stresses in steel frames by the assumption that the joints are perfectly rigid have been completed by the engineering experiment station of the University of Illinois under the direction of Wilbur M. Wilson, assistant professor of civil engineering, and Herbert F. Moore, research professor of engineering materials.

The test pieces used were connections which are types common in engineering structures and which resist loads and movements by methods fundamentally different. The connections were tested in pairs in a 300,000-pound Olsen four-screw testing machine. Results of the tests are given in detail in Bulletin No. 104 entitled, "Tests to Determine the Rigidity of Riveted Joints of Steel Structures." Copies of this bulletin may be obtained by addressing the engineering experiment station, University of Illinois, Urbana, Ill.

Making and Testing Silica Brick

Refractoriness Depends Largely on the Ratio Between Alumina and Silica—Size of Grain and Operating Temperatures Important—Results of Crushing, Porosity, Shrinkage and Expansion Tests

BY ROBERT J. MONTGOMERY

WITHIN the last few years a number of investigations on the properties of silica brick have been published, including methods of manufacture and testing, but comparatively little has been published on the subject of a cement or mortar to be used in laying such brick. It is not necessary to emphasize the importance of the cement which is laid between the silica brick or shapes and which is exposed to the same conditions of load, temperature, corrosion, etc., as the brick. In this paper an attempt is made to cover in a general way the subjects of composition and testing of the silica cement that is now in general use.

Probably the ideal cement is one of the same composition as the brick, for then such properties as the coefficient of expansion, drying and burning shrinkage, etc., could be largely disregarded. In fact, present-day practice in the manufacture of silica cement approaches this as nearly as possible in the use of "ganister mud," also used in making silica brick; but owing to its lack of plasticity the "ganister mud" must be treated by the addition of clay and by grinding to allow easy working with a trowel when mixed with water to form a mortar. In brief, silica cement is a mixture of ground ganister rock and clay. The ganister may be freshly ground ganister rock, green bricks which have been discarded on account of defective molding, or ground bats, which are cull brick or shapes. These green bricks or burned bats contain about 2 per cent of lime added in the manufacture of the original brick.

The proportions used vary considerably; the clay content is usually from 15 to 35 per cent, while the proportion of ganister rock to bats is one to one. When green bricks are used, it is usually in place of the ganister rock.

The effect of varying the clay content is well understood and will be considered later. The correct proportioning of burned bats and unburned ganister or green brick is not so easily determined, although it is recognized that on heating to operating temperatures the ganister or green brick will expand more than the burned bats, owing to the change of the quartz to cristobalite. In the burned bats a large part of this change has already taken place. The proportions are more often determined by the amount of cull material on hand at the brick plant than by any desire to control the expansion of the cement. To the writer's knowledge this phase of the subject has not been investigated to any great extent.

The clay content is important, for it affects to a marked degree the refractoriness and plasticity or working properties of the cement. As is well known, alumina, which is introduced in the clay, is an active flux when in contact with silica; and in a silica cement it is the factor which governs the fusion point, as the other fluxes remain quite low in amount and quite constant when high-grade materials are used. The amount of lime introduced in the burned bats or green brick is too small to have much effect on the fusion point and will be constant if a constant percentage of bats is used. In determining the effect of a given percentage of clay the eutectic curve between alumina and silica is of considerable value. This curve indicates the limit of refractoriness that may be attained by a cement containing a given percentage of alumina introduced from clay or already in the ganister rock as an impurity. On making fusion tests covering a great many samples of cement it was found that if all materials used are of good quality the fusion point will not fall more than two cones below this

From a paper presented at the twenty-first annual meeting of the American Society for Testing Materials, Atlantic City, N. J., June 25-28. The author, Robert J. Montgomery, is ceramic engineer, H. Koppers Co., Pittsburgh.

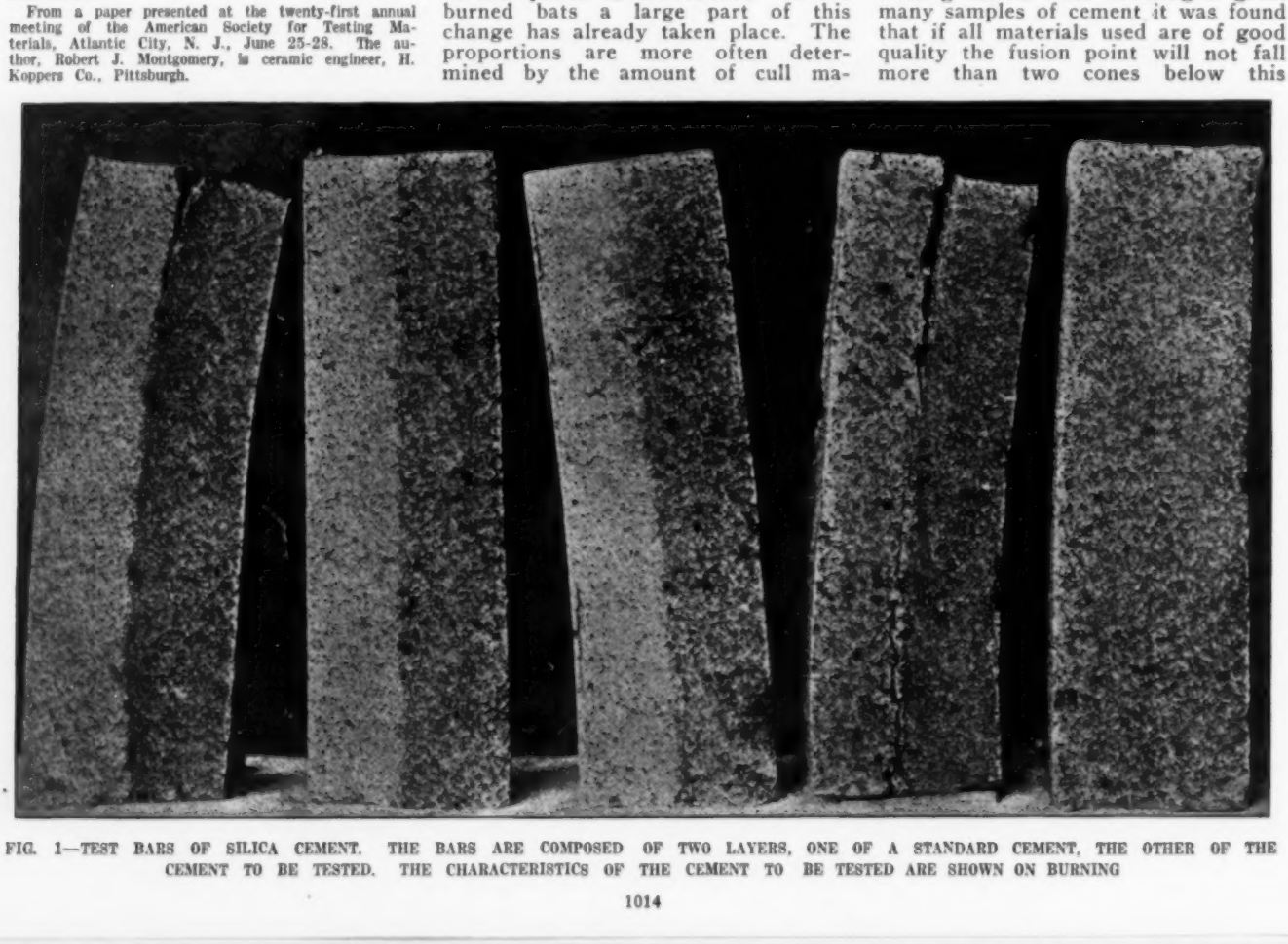
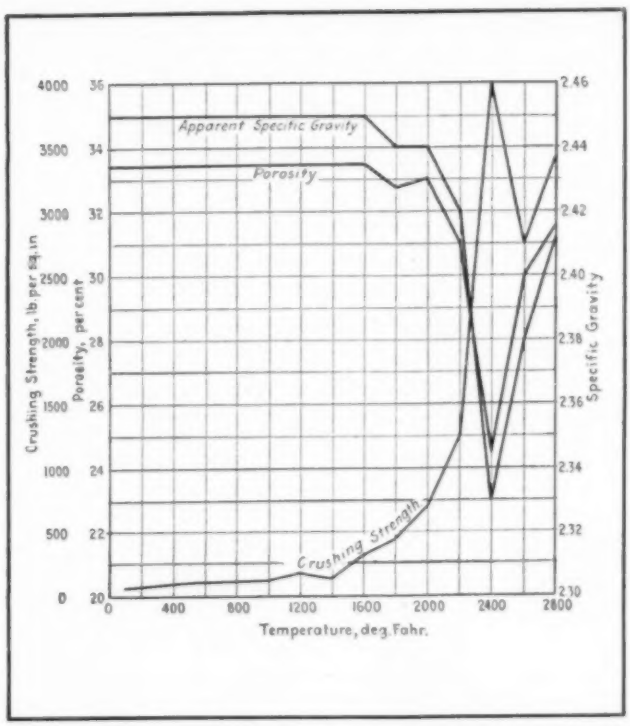


FIG. 1—TEST BARS OF SILICA CEMENT. THE BARS ARE COMPOSED OF TWO LAYERS, ONE OF A STANDARD CEMENT, THE OTHER OF THE CEMENT TO BE TESTED. THE CHARACTERISTICS OF THE CEMENT TO BE TESTED ARE SHOWN ON BURNING



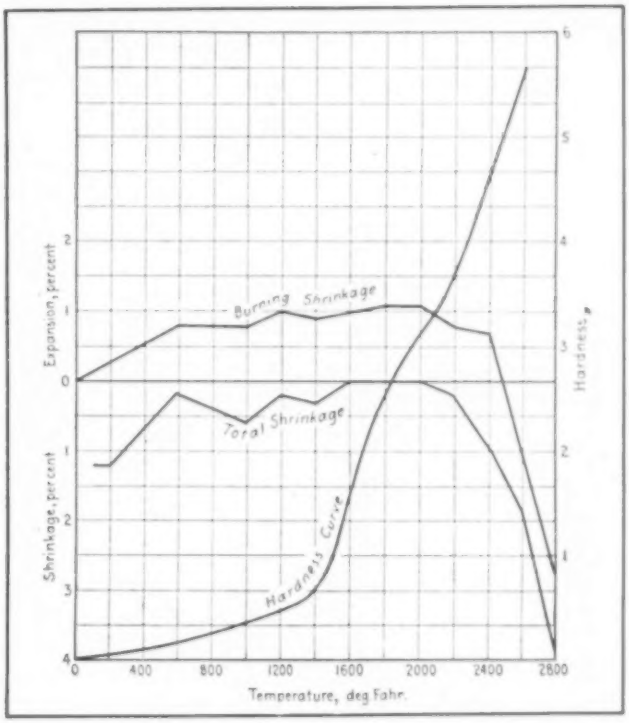


FIG. 2—EFFECT OF TEMPERATURE ON CRUSHING STRENGTH, POROSITY AND SPECIFIC GRAVITY OF SILICA CEMENT. FIG. 3—EFFECT OF TEMPERATURE ON SHRINKAGE AND HARDNESS. DIAGRAMS PLOTTED FROM TABLE I.

theoretical line. By using a combination of the fusion test and analysis a cement of any desired fusibility up to the melting point of silica itself may be proportioned. Table II gives the composition and fusion points of 27 commercial cements. The value for percentage of alumina is obtained by adding the values in the second and third columns and calculating the percentage of each based on $Al_2O_3+SiO_2=100$. This gives the true ratio between them.

The desired refractoriness of the cement depends on the conditions of use, such as the temperature, load, etc, and this can best be determined by trial. It should be borne in mind that the clay corrects one evil and introduces another. If the clay content is too low the plasticity will be so low that it will be practically impossible to lay brick with full joints, as the water will run out of the cement immediately into the brick on which it is placed and the cement will act more like wet sand than a workable mortar. If the clay content is too high the fusion point will be lowered and the burning shrinkage will be excessive, causing a settling of the walls and loss of alignment. It is necessary then to establish the refractoriness required to withstand the maximum furnace temperature and still avoid softening and shrinkage, while the cement remains plastic enough to allow good work in laying the brick.

The plasticity of the cement can be controlled to some extent by fine grinding. The finer grained material can be more easily spread with a trowel, but if too fine, vertical parting cracks will appear in the joints, resulting in leaks through the walls. Extreme fineness also tends to increase the drying and burning shrinkage.

Next to the refractoriness and plasticity the most important properties are those developed at various temperatures below the fusion point. These include drying, burning and total shrinkage, porosity, apparent specific gravity, crushing strength, hardness and safe operating temperature. A cement of the following composition was tested, and the various properties determined are given in Table I.

Analysis

	Per cent
SiO_2	90.94
Al_2O_3	5.03
Fe_2O_3	0.52
CaO	1.60
MgO	0.00
Ignition loss	1.74
Moisture	0.15

Sieve Test

Retained on 20 mesh	0.0
Retained on 48 mesh	12.2
Retained on 100 mesh	34.7
Retained on 200 mesh	16.8
Through 200 mesh	36.3
	100.0

The fusion point was cone 20.

The drying and burning shrinkage was measured on small test bars; the crushing strength test was made cold on 1-inch cubes burned to the temperatures indicated in Table I. The apparent specific gravity, porosity and hardness were determined on similar cubes.

Shrinkage Varies

Drying shrinkage is objectionable but cannot be avoided as the clay must shrink. The amount of shrinkage will vary from 0.5 to 2.0 per cent, depending on the fineness of the grinding and the amount of clay substance in the mixture. The burning shrinkage is low until about cone 13 is reached. Above this temperature it increases rapidly and will depend as much on the amount and condition of the base fluxes present as on the alumina content. The following results of three tests show the percentage of expansion and shrinkage

Table I

Properties of Silica Cement at Various Temperatures

Temperature, deg. Fahr.	Crushing Strength lb. per sq. in.	Porosity, per cent	Apparent Specific Gravity	Shrinkage, per cent Total	Shrinkage, per cent Burning	Hardness: Scratched by
Room	61	Disintegrated[1]	Disintegrated[1]	1.2	.....	1:5-H Pencil
212	90	Disintegrated[1]	Disintegrated[1]	1.2	.....	1:5-H Pencil
600	110	Disintegrated[1]	Disintegrated[1]	0.2	0.8 (Exp.)	1:5-H Pencil
1000	123	Disintegrated[1]	Disintegrated[1]	0.6	0.8 (Exp.)	1:5-H Pencil
1200	185	Disintegrated[1]	Disintegrated[1]	0.2	1.0 (Exp.)	1:5-H Pencil
1400	140	Slightly disintegrated	Slightly disintegrated	0.3	0.9 (Exp.)	2:Lead
1600	320	33.4	2.45	0.0	1.0 (Exp.)	3 Copper Wire
1800	447	32.8	2.44	0.0	1.1 (Exp.)	3 Copper Wire
2000	700	33.2	2.44	0.0	1.1 (Exp.)	4:Steel Nail
2200	1227	31.2	2.42	0.2	0.8 (Exp.)	5:Glass Tubing
2400	4000*	24.6	2.33	0.9	0.7 (Exp.)	6:Harder than 5
2600	2700*	30.0	2.38	1.8	1.0 (Shr.)	6:Harder than 5
2800	3385*	31.5	2.41	3.9	2.8 (Shr.)	6:Harder than 5

*These cubes were crushed on a 50,000-lb. machine. The load was so small for the machine that only approximate results were obtained. The high point at 2400° F. seems to be correct.
[1]Disintegrated when boiled in water.

Table II

Analyses and Fusion Points of Commercial Cements

Test No.	Analysis SiO_2 per cent	Analysis Al_2O_3 per cent	Analysis Fluxes and Ignition Losses, per cent	Calculated Values SiO_2 per cent	Calculated Values Al_2O_3, per cent	Fusion Cone
1	83.30	11.68	5.02	87.8	12.2	28
2	87.80	8.27	3.93	91.2	8.8	27
3	90.30	5.84	3.86	94.0	6.0	29
4	90.71	5.50	3.79	94.3	5.7	28
5	92.00	5.18	2.82	94.7	5.3	30
6	91.44	5.76	2.80	93.9	6.1	29½
7	91.56	5.46	2.98	94.3	5.7	28
8	90.58	4.99	4.43	94.7	5.3	30
9	92.14	4.13	3.73	95.7	4.3	31
10	92.30	4.82	2.88	95.0	5.0	29½
11	92.50	4.75	2.75	95.0	5.0	29
12	91.64	4.86	3.50	94.7	5.3	29½
13	94.16	3.80	2.04	96.2	3.8	29
14*	....	....	....	....	....	....
15	94.16	2.12	3.72	97.6	2.4	30
16	94.30	1.32	4.38	98.5	1.5	31½
17	93.58	1.54	4.88	98.3	1.7	32
18	94.90	1.50	3.60	98.5	1.5	31
19	94.00	2.43	3.57	97.6	2.4	29½
20	93.00	1.03	5.97	98.7	1.3	31½
21	91.62	2.60	5.78	97.3	2.7	31½
22	92.96	3.73	3.31	96.1	3.9	30
23	90.48	4.12	5.40	95.5	4.5	29½
24	92.00	4.85	3.15	95.0	5.0	30
25	88.30	8.27	3.43	91.3	8.7	26
26	87.16	8.65	4.19	90.9	9.1	27
27	87.31	8.24	4.45	91.3	8.7	26
28	89.31	6.62	4.25	92.9	7.1	26½

*Test No. 14 not completed.

due to burning:

Sample	Cone 1	Cone 8	Cone 13	Cone 20
1	0.5 (exp.)	0.4 (exp.)	0.3 (exp.)	0.4 (8hr.)
2	0.0	0.0	0.0	3.8 (8hr.)
3	0.0	0.0	0.5 (8hr.)	6.1 (8hr.)

There is a tendency for silica cement rather low in clay to show an expansion of about 0.5 per cent at the lower cones. This observation was made on small test bars burned in the laboratory, but in all probability it will hold for commercial installations. As the temperature increases the shrinkage of the clay overcomes the expansion of the silica and at cone 20 the burning shrinkage may vary from about 0.4 per cent to as high as 6.0 to 7.0 per cent. This will give a total shrinkage including drying and burning, of 1.0 up to 8.0 or 9.0 per cent.

The burning and shrinkage curves of the cement tests recorded in Table I are plotted in Fig. 3.

Porosity and Apparent Specific Gravity

The determinations of porosity and apparent specific gravity will aid in differentiating between cements but they do not have the practical application of the shrinkage determination. The porosity will vary from about 30-35 per cent at cone 1 to 15-30 per cent at cone 20, depending on the composition of the cement. The apparent specific gravity will vary from 2.40-2.45 at cone 1 to 2.20-2.38 at cone 20, depending on the composition.

Fig 2 shows the variation of the porosity and apparent specific gravity of the cement referred to in Table I. The increase in porosity and specific gravity above 2400 degrees Fahr., with this sample was unexpected and the cause is not known. Such an increase usually indicates overfire and swelling but overfire would reduce the shrinkage and seldom increases the specific gravity. The hardness and crushing strength curves of the sample tested are also plotted in Figs. 2 and 3 from the data in Table I. The hardness increased as the temperature was raised to 2800 degrees Fahr., while the crushing strength reached a maximum of 2400 degrees Fahr. The strength was quite low until 1600 degrees Fahr. was reached and then increased rapidly. The values above 2000 pounds as noted in Table I are only approximate as the testing machine was not adapted to the load. As most furnaces are constructed to give stresses of not over 25 pounds per square inch the cement will easily carry the load at all temperatures.

To obtain information relating to safe operating temperatures three cements were molded into brick form 9 x 2½ x 2½ inches, placed on end in a small furnace and heated to approximately their melting point for 24 hours.

One was a cone-31 cement. It melted slowly at 2800 degrees Fahr., and slumped under its own weight, being too soft to be of value as a cement. It stood at 2700 degrees Fahr. without showing any tendency to deform.

The second was a cone-30 cement. It softened at 2800 degrees Fahr., slumping to the bottom of the furnace under its own weight. At 2700 degrees Fahr. it showed no tendency to deform after 24 hours at this temperature. The third was a cone-28½ cement. It slumped to the bottom of the furnace under its own weight at 2700 degrees Fahr., but held 24 hours at 2600 degrees Fahr. without softening.

The following tests will give complete information concerning a silica cement: Analysis, fusion cone, sieve test using 20, 48, 100 and 200-mesh Tyler standard sieves, drying shrinkage, burning tests at several cones as Nos. 1, 8, 13 and 20, determination of burning shrinkage, total shrinkage, porosity and apparent specific gravity.

For control work these tests may be narrowed down considerably. A good way to compare the burning behavior of two cements is to make a test bar, about 1½ by 1¼ by 5 inches long, composed of two layers, the lower ¾ inch of a standard cement and the upper ¾ inch of the cement to be tested. The joint between the two should be well worked by roughening the surface of the lower layer before the upper one is put on. This "double bar" is then burned to the desired temperature, say cone 20, and the difference in expansion and contraction will be shown by the appearance of the bars. Fig. 1 shows the results of such a test. By changing the composition of the cement corrections may be made in the test batch until it agrees with the standard.

Book Review

Essentials of Sheet Metal Work and Pattern Drafting, by James S. Daugherty; cloth; 176 pages, 4½ x 7 inches; published by Frederick J. Drake & Co. and furnished by THE IRON TRADE REVIEW for $1.50.

The author is instructor in sheet metal work, school of applied industries, Carnegie Institute of Technology, Pittsburgh. The book is written, it is pointed out, in answer to numerous questions for information regarding courses, in sheet metal, suitable for grade and high schools. These requests came from school authorities who are introducing sheet metal work into the regular school curriculum.

The problems in the book follow the lines of the most improved and practical shop methods, of which knowledge was acquired in many years of practical experience. The problems presented are all practical and the author has succeeded in explaining each step in a clear and thorough manner. Numerous illustrations are included, both of sheet metal working machinery and sheet-metal layouts.

The manner in which the subject of laying out sheet metal sections is explained is especially interesting. Generally a hard subject to comprehend, the author makes it clear in every step.

The book includes 15 chapters which are devoted to the following subjects: Transferring patterns to metal; cutting patterns and templates; folding edges and seaming; forming, grooving, beading and crimping; soldering; double-hemmed edge; wiring process; notching and burring; double seaming, peening and raising; radial line developments; pitched covers and flaring articles; parallel line development; pipe intersections and T-joints; elbows; return and face miters.

While the book is written primarily as a text book for schools, its value to the practical sheet metal worker should not be under-rated as all the information contained is up to date and the processes described are those approved in present day practice.

England Protects Needed Workers

Ministry of National Service Issues Revised Schedule of Protected Occupations—Issues Red Cards Granting Exemption from Immediate Recruitment—Only Calls Men Physically Fit for General Service

PROVOST MARSHAL GENERAL CROWDER has followed up his many calls upon the man power of the nation to produce a sizable army with a "work or fight" dictum. This does not exempt from military service those whom it affects. It is designed to put men of selective service age at labor essential to the successful conduct of the war. It likewise will disengage men from work which women can perform. With an extended prosecution of the war however, and additional calls by draft to the colors, some system of protected occupations must naturally follow. Certain industrial operations are as essential to the winning of the war, as an advancing army on the western front. What Great Britain has done and is doing in scheduling so-called "protected occupations," therefore becomes increasingly interesting.

How the System Works

This schedule is dated Feb. 1, 1918, and is numbered M. M. 130 (revised). Opposite each occupation in the following extract of this schedule, is given the age at which protection begins, providing that age was reached prior to Jan. 1, 1917. For instance if a blacksmith became 23 since Jan. 1, 1917, he is liable to recruitment. While not all munition work operations are enumerated, the schedule applies to men employed on admiralty, war office and munitions work or in railway shops. All men of military age engaged in unscheduled operations are liable to recruitment if they have been medically classified in Grade No. 1, which means they are "fit for general service."

Protected occupation certificates, known as "red cards" are issued to workmen whose work is scheduled and who are above the age limit or below Grade 1. The temporary protection certificate or "black card" is issued to workmen not in a scheduled occupation who are below Grade 1 in the medical classification. These certificates do not exempt the holders from military service but simply signify that the recruiting authority has decided not to call them up for the present.

Salient Features Outlined

The main features of the revised schedule which became operative Feb. 1, 1918, are as follows:

At present, only men medically classified in Grade 1, fit for general service, will be recruited.

With the exception of certain classes of men engaged on urgent admiralty work, the minimum age of protection for Grade 1 men is 24.

Under the previous schedule men have not been recruited from admiralty, war office or munitions work, if they were over 32 years of age; they are now liable to recruitment up to full military age unless they are in a scheduled occupation where some lower age limit is fixed.

Men now rendered liable for recruitment from munitions work are of three classes: (a) in all but a few occupations, men under 24 in Grade 1; (b) in some occupations, men over 24 in Grade 1; (c) "dilutees" (men who have entered their present occupation since Aug. 15, 1915, the date of the national registration) in Grade 1.

An abstract of this schedule of occupations with ages fixed after consideration of the importance of the output for which the particular occupation is needed, of the supply and demand for that particular class of labor and of the extent to which that particular kind of work can be performed by persons out side of Grade 1 follows:

A—Shipbuilding and Repairing

*Age Limit** 19

Plater, plater's helper, puncher and shearer, angle iron smith, angle iron smith's hammerman or striker, angle iron smith's back-hander, riveter (hand or machine), holder-up, rivet heater, screwer-up, counter and tester, caulker (hand or machine), packer and liner, driller or hole cutter, welder or cutter (oxy-hydrogen, oxy-acetylene, electric), ship's smith, ship's smith's hammerman, ship's smith's finisher, liner-off or loftsman, shipwright, shipwright's helper, shipwright (wood), boat-builder, sheet-iron worker, sheet-metal worker, coppersmith, electrician, electrical wireman.

Age Limit 23

Planer and scarpher, tool smith or tool fettler, block maker, spar maker, pattern maker, joiner, cabinet maker, sawyer, wood machinist, rigger, sailmaker, stager, stager's helper, engineer (shipyard) if qualified fitter, fitter (shipyard), plumber, brass finisher, draughtsman, painter, red-leader, cementer, boiler scaler, shipyard laborer, timekeeper, and wages clerk.

B—Mining and Quarrying

(Age Limits in Brackets.)

Copper Mining.—All underground workmen (23), foreman (above ground) (32).

Fireclay Mining, Silica Stone, Silica Sand and Moulding (Foundry) Sand, Quarrying.—All underground workmen in mines (24), getter or quarryman in quarries (24), foreman (above ground) (32).

Ganister Mining and Quarrying.—All underground workmen in mines (23), getter or quarryman in quarries (23), foreman (above ground) at mines or quarries (32).

Iron Mining and Quarrying (including Manganese and Chromite).—All underground workmen in mines (23), getter or quarryman in quarries (23), surface workmen (25).

Lead and Zinc Mining.—All underground workmen (23), foreman (above ground) (32).

Limestone and Dolomite Quarrying.—Foreman (above ground) (32), getter or quarryman (25).

Grindstone Quarrying and Making.—Quarryman, dresser, and tester (28).

Tin and Wolfram Mining.—All underground workmen (28), foreman (above ground) (32).

Fluor-Spar Mining and Quarrying.—All underground workmen in mines (23), getter or quarryman in quarries or open workings (23), foreman (above ground) (32).

Oilshale Mining.—Workmen below ground (all classes) (19), workmen above ground (all classes) (23).

C—Furnace Firebrick

Furnace, Firebrick (Including Ganister, Magnesite, Fireclay, Chrome and Silica Brick) Manufacture.—All classes of workmen except unskilled men (23).

D. Coke-Oven Plant

Coke-Oven Plant (excluding by-product plant workers who are dealt with under Chemicals and Explosives). —All classes of workmen except unskilled (25).

E—Metal Manufacture (not Foundry)

Iron and Steel.—All classes of workers (except unskilled men) engaged in the manufacture of iron and steel, from the treatment of the ore to and including the production of the metal in standard forms such as ingot, billet, bloom, bar, rod, plate, or section, but excluding all workers engaged in the manufacture of steel sheet, tinplate, blackplate, or terneplate (23).

Steel Sheet Manufacture.—All classes of workers (except unskilled men) (42).

Tinplate, Blackplate and Terneplate Manufacture.—All classes of workers (except unskilled men) (42).

Other Metals.—An Age Limit of 23 is fixed for all classes of workers (except unskilled men) engaged in the manufacture of the following metals, from the treatment of the ore to and including the production of the metal in standard forms such as ingot, bar, rod, plate, sheet, section or powder:—Copper, spelter and zinc, aluminum, lead, nickel, tin (smelting only), tungsten, bismuth, cadmium, platinum, antimony, manganese, molybdenum, vanadium, alloys of the above metals, other metals needed for Admiralty, War Office or Munition Work.

F—Engineering (including Marine Engineering, etc.)

The protection set out in Section F applies to every man engaged in an occupation therein set out who is employed on Admiralty, War Office, or Munitions work, or in a railway workshop, whether employed in an engineer-

ing works or elsewhere, unless his occupation is specifically set out under the Section or Sub-Section which deals with the industry in which he is engaged, or unless he is a colliery worker. With these reservations, any man in an occupation covered by Section F is protected as defined by Section F, and cannot claim to be covered by any code number outside that Section.

Riveters, Platers, etc.—Boiler maker (23), boiler tuber (25), caulker (boiler work) (23), driller (boiler work), hand (25), driller (machine), boiler or construction work, and driller (hand), constructional work (32), holder up (boiler or locomotive work) (25), holder up (construction work) (32), hole cutter (boiler making) (25), plater (boiler or locomotive work) (23), plater (constructional work) (25), plater's helper (boiler or constructional work) (28), puncher and shearer (boiler or locomotive work) (28), puncher and shearer (constructional work) (32), riveter (boiler or locomotive work) (23), riveter (constructional work) (25), stager (boiler or constructional work) (28), templet maker (boiler or locomotive work) (23), templet maker (constructional work) (28), steel erector (constructional work, buildings only) (23), planer (edge plate) (28), tool fettler (32), bar or plate straightener (32).

Fitters, Erectors, Toolmakers, etc.—Brass-finisher (engineering), *i.e.*, skilled brass fitter or brass-turner (excluding men engaged on sanitary, gas and water fittings) (23), erector (engine, locomotive, machine, or motor chassis) if qualified fitter (23), engine-tester (internal-combustion engines) if qualified fitter (23), fitter (metal), skilled (23), millwright (if qualified fitter or turner) (23), plumber, heating engineer or skilled metal pipe fitter (excluding gas fitter) (28), skilled mechanic (wholly employed on the repair or maintenance of motor or steam lorries) engaged in the industries protected in this Schedule (25), toolmaker (tool-room), including press-tool maker, die-sinker, jig maker, gauge maker, tool turner, tool fitter (23), railway points and crossings fitter, signal fitter (32).

Turners, Metal Machinists, Toolsetters, etc.—Ball bearing finishing grinder and machine setter-up (23), borer (on vertical or horizontal boring machine) who sets up his own work and machine (23), capstan or turret lathe turner who sets up his own work and machine (25), driller, skilled (engineering shop) who sets up his own work and machine (28), grinder (on universal grinding machine) who sets up his own work and machine (23), grinder (other) on plain, surface, or other precision grinding machine who sets up his own work and machine (25), grinder (wet stone) (32), planer, who sets up his own work and machine (25), shaper, who sets up his own work and machine (25), slotter, who sets up his own work and machine (25), metal turner (skilled), center or combination lathe (23), metal spinner (28), toolsetter (if qualified fitter or turner), if "setting up" for operators (23), toolsetter (other), if "setting up" for operators (25), universal miller, who sets up his own work and machine (23), miller (vertical or horizontal), who sets up his own work and machine (25), gear cutter, who sets up his own work and machine (23), metal polisher (36), metal sawyer (band or circular saw) (28).

Electricians.—Armature, transformer, or other electrical winder (heavy work only) (25), commutator builder (heavy work only) (25), electrical fitter (23), electrician (skilled) engaged on the installation, repair or maintenance of electrical plant and machinery (23), electrician (engaged on wiring) (28).

Foundry Workers.—Coremaker, making heavy or intricate cores only (23), crucible man (25), cupola man (leading hand) (25), cupola charger (28), metal carrier (molten metal) (28), metal caster (strip or ingot caster) (25), metal caster's helper (strip or ingot caster's helper) (28), metal pourer (foundry) (28), metal moulder (excluding plate, machine and rain-water goods moulder (23), plate or machine moulder (28), metal smelter (25), dresser, fettler, or trimmer (all metals), die caster (leading man of squad) (28).

Smiths, Forge Workers, Stampers, etc.—Angle-iron smith or bordersmith (23), blacksmith (excluding farrier) (23), blacksmith's or angle-iron smith's striker or hammerman (25), hot drop stamper (23), hot drop stamper's assistant (excluding kicker and driver on stamps under 5 cwt.) (23), forgeman (23), forgeman's helper (25), furnaceman (forge) (23), heater (forge) (25), press operator (on heavy forging press) (25), tool smith (engineering) (23), tool hardener or temperer (skilled) (25), gun hardener (ordnance) (23), armour piercing shell hardener (23).

Other Workers.—Annealer (leading hand) (28), case hardener (leading hand) (28), coppersmith (on marine, locomotive or pipe work) (23), coppersmith (other) (28), draughtsman (not tracer, engineering, structural steel or reinforced concrete work) (23), gas-producer man (charge hand) (28), grease tinner galvanizer or fuser (enamel) (28), pattern maker (23), sheet-metal worker (28), sheet-iron worker (skilled) (28), slinger, rigger, or block and fall man (32), saw doctor, saw sharpener and setter (hand worker) (28), welder or cutter (oxy-hydrogen, oxy-acetylene, electric) (25), metal pattern filer (32), electro-plater (foreman or charge hand) (32), rope splicer (for power transmission ropes only) (32), boiler and pipe coverer (28), wire wheel truer (motor vehicle or aeroplane) (28).

J—Miscellaneous Metal Trades

Anchor Making.—Foreman (25), furnaceman, forgeman or steam hammerman, fitter, turner, machineman on anchor parts, anchor smith, and striker (all 23).

Anvil and Vice Making.—Anvil maker and grinder, vice forger and his assistant (all 23).

Bolt, Nut, Screw and Rivet Manufacture.—Head warehouseman (32). Bolts and nuts: Foreman, steel-bar drawer, and power press cutter (32), bolt or nut forger and header-up (25). Screws and rivets: Foreman (32), header-up (25).

Chain Making.—Foreman (25), shearer, furnaceman, chainmaker, striker, rigging and lifting-block chain makers; swivel, shackle, slip and break stopper maker, and mooring chain maker (all 23), electric chain-welding machinist (28), chain tester and chain examiner (23).

File Manufacture.—Foreman (32), file cutter (hand or machine), file grinder and file hardener (all 28), file forger (25).

Scrap Metal Merchants.—Manager, with 10 years' experience of the trade, scrap metal sorter, ditto, and scrap metal broker, ditto (all 28).

Tube and Tube Fittings Manufacture—Iron, Steel, Copper, Aluminium, and Alloys.—All classes of workmen, except unskilled (23).

Turbine Blade Drawer (25).

Weighing Machines, Scales and Balances.—Adjuster and repairer (27).

Wire Manufacture.—Foreman (25), wire drawer, hole setter, block minder and wire-drawer's plate pricker (all 23), annealer, furnaceman, cleaner and pointer, wire-tester and galvanizer (all 25), warehouseman (foreman) (35).

Wire-Rope Manufacture.—Foreman or charge hand, closer or layer-up of ropes 1½-inch circumference or over, wire-rope strander or 8-inch bobbin and larger, and wire-rope splicer and fitter (all 25).

P—Miscellaneous Trades and Occupations

Carbons, Carbon Brushes and Foundry Crucible Manufacture.—All classes of workmen, except unskilled (28).

Carter, Lorryman and Drayman (horse or power) in the direct employment of firms engaged in the industries protected in this Schedule (30).

Electrical Insulating Material Manufacture.—Skilled workmen only (25).

Electrical Wire and Cable Manufacture.—Skilled workmen only (25).

Engine Men, Shunters and Boiler Men, Crane Drivers, etc. (in the employment of firms engaged in the industries protected in this Schedule).—Steam engine driver (stationary engine or works locomotive) and shunter (in works yard) (28), power crane driver (other than electrical crane) (32), boiler fireman or stoker (leading hand) (28), boiler fireman or stoker (not leading hand) (32), grab crane driver (32), platelayer in works (36).

Patent Fuel Manufacture.—All classes of workmen, except unskilled men and shippers (27).

R—Professional Occupations and Administrative and Technical Staff

Chemist (works, analytical or research), mechanical engineer (professional), electrical engineer (professional) (all 23), the working principal of a firm, managing director, works manager, assistant works manager, head of an administrative department, practising professional accountant, technical staff and clerks possessing high technical knowledge, *e.g.*, estimating or cost clerk, etc. (all 25), timekeeper in works with 1000 employes or over, storekeeper (works general stores or engineering works tool stores) in works of 250 employes or over (28).

*Age is to be calculated as on Jan. 1, 1917. This date is taken because all returns and records under the old Schedule are based upon ages calculated as at Jan. 1, 1917, and any alteration would now be impracticable.

The production of antimony ores in the United States in 1916 according to the best information available was about 4500 short tons, valued at $40,580. The metallic antimony content of this material was about 1770 short tons.

Easily Handled Electric Furnace

The Installation Described Has an Automatic Current Control That Insures a Constant Load—The Electrodes Are Actuated and the Furnace is Tilted by Individual Motors

THE furnace shown in the accompanying illustrations was recently installed at the plant of the Driver-Harris Co., Harrison, N. J., for melting alloy steel. The furnace is of especial interest because of its electrical control equipment. The melting unit is of the heroult arc type with automatic regulation and has a capacity of two tons.

The amount of power taken to start the heat is small, but as the resistance of the furnace circuit decreases, owing to the heating of the electrodes and the consolidation of the charge, the power consumption rapidly increases until stable conditions are reached. The average amount of power consumed is then held practically constant by the automatic regulator, with the exception of a slight continuous increase, due probably to a corresponding decrease in the resistance of the furnace circuit.

No uniformity exists in the actual power consumption. As the charge melts down, pieces of metal fall in between the electrodes and establish short circuits. For the most part, these short circuits are only momentary as the fragments causing them are promptly melted down, but occasionally they persist and then the automatic regulator draws up the electrodes until they are clear. This process sometimes breaks the arc and then there is a sudden decrease in the power consumption until the regulator brings the electrodes down again and re-establishes the arc. As would be expected, the nickel steel alloy shows more of these irregularities than the softer nickel-chrome.

Power Consumption Changes

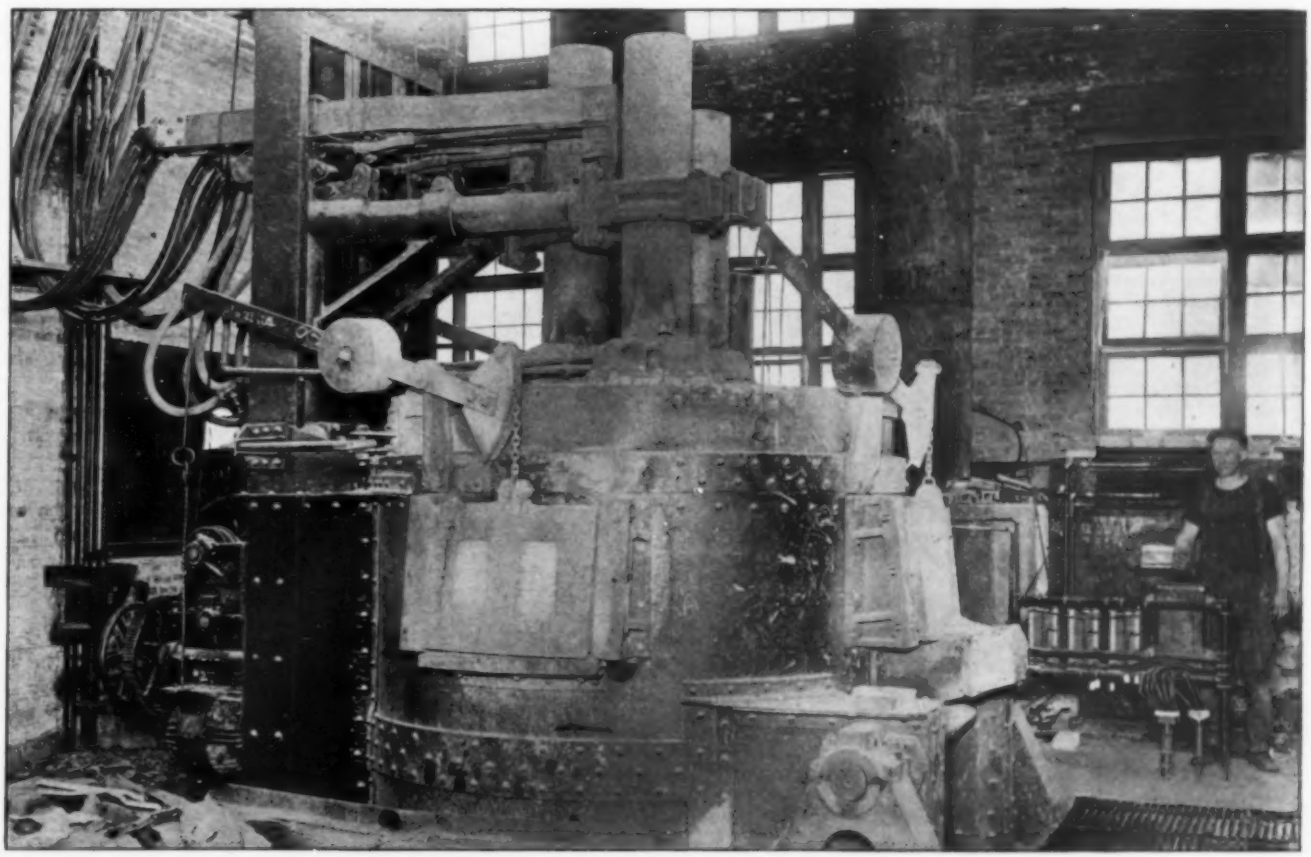
Toward the end of the run, there is a marked change in the power consumption when the metal is given a special treatment before pouring. In the case of the nickel steel, a higher temperature is necessary, perhaps to lower the carbon content, while with nickel-chrome the temperature is lowered. The temperature of the furnace averages about 2200 degrees Fahr.

The high momentary overloads are characteristic of electric furnace work and make it radically different from ordinary power service. They must be taken into account in designing the electrical equipment for the furnace, and some of the apparatus must be especially designed to withstand them. The equipment for this installation was furnished by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Power for this furnace is furnished in the form of 2-phase, 60-cycle, 2200 volt-current. In the high tension lines are a disconnecting switch and an oil circuit breaker. The latter is used to control the circuit. It can be operated manually and is also provided with low-voltage and overload protection. In order to prevent its operation on momentary overloads, the overload trip is controlled by relays with definite inverse-time-limit action. The high tension apparatus and the transformers are contained in a brick compartment behind the furnace.

There are two 400-kilovolt-ampere 2200-110-volt transformers of the oil-insulated self-cooled type. They are so connected that they change the high-voltage, 2-phase current into low-voltage, 3-phase current, one phase for each of the three electrodes of the furnace.

Special construction is necessary to withstand the overloads. These overloads are of such short duration that their heating effect is negligible but they tend to force the coils apart. Hence, the coils are firmly braced and are, in fact, capable of withstand-



GENERAL VIEW OF 2-TON ELECTRIC FURNACE. MOTOR AND GEARING FOR RAISING AND LOWERING THE ELECTRODES ARE SEEN AT THE LEFT

ing momentary overloads 15 times greater than the normal load.

The reactance of the transformers is about double that of ordinary power transformers of the same size. This reactance together with that developed in the low tension leads, which are made as short as possible in order to keep this factor low, prevents the current flowing through the furnace from exceeding five or six times normal values even on dead short circuits. The voltage regulation is from 106 volts on no load to about 100 volts on full load, and the power factor is from 85 to 90 per cent.

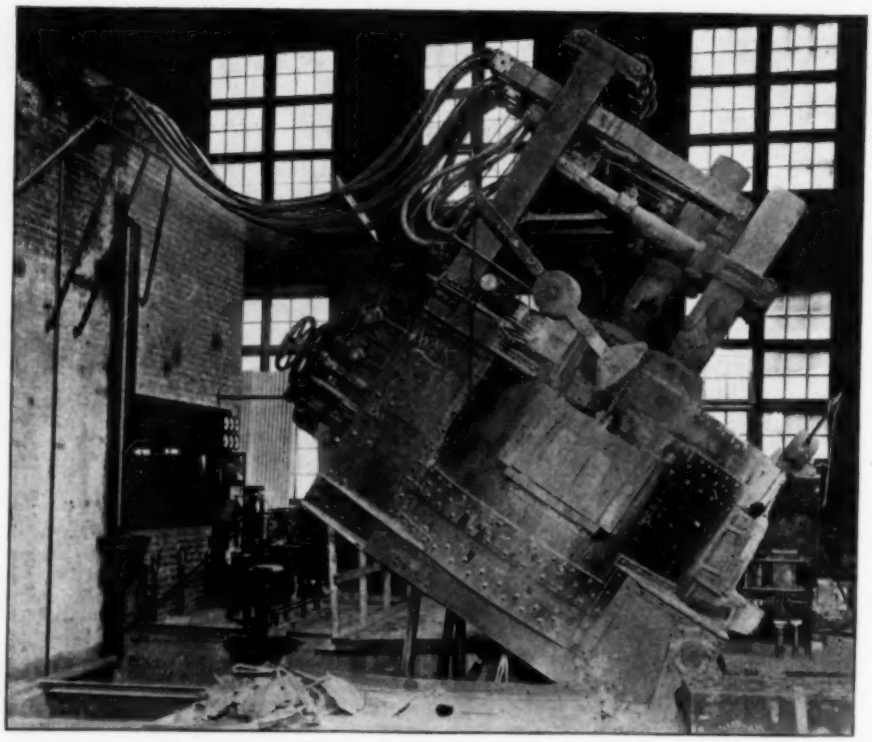
One of the most interesting features of the equipment is the regulator, which automatically maintains an approximately constant current at the furnace electrodes. Without this device the current consumption would vary erratically, even if an operator were constantly endeavoring to correct the variations. It is designed, therefore, to save labor and current, reduce to a minimum the time required to prepare a charge, and by providing uniform conditions, keeps the quality of the product uniform.

Regulation is Automatic

Each furnace electrode has a separate regulating mechanism and a raising and lowering motor. The regulator can be set for any desired current value and when this value is exceeded each regulating mechanism closes a contact momentarily which causes the motors to raise the electrodes slightly. The contacts continue to close at brief intervals until the electrodes are drawn up high enough to reduce the current to the predetermined value, the intermittent action being employed to prevent the electrodes from being raised too high and thus causing an unstable condition. When the current falls below the predetermined value, the electrodes are lowered in a similar manner. The regulator itself is controlled by a solenoid energized by means of current from series transformers in the main high-tension circuit. Damping devices prevent the regulator from acting on overloads that immediately correct themselves. In addition to the automatic device, each electrode motor has a drum controller for manual operation.

The electric motors are direct-current machines, because alternating-current motors cannot be controlled with sufficient delicacy. The operating current is obtained from a 4½ kilowatt motor-generator set located in the transformer compartment. The motors are of 2-horsepower capacity and are totally enclosed. They are provided with grease-cups so that the lubrication is not interfered with when the furnace is tilted for pouring.

An instrument board is located beside the regulators and carries the following apparatus: A kilowatt meter; a voltmeter; a power factor meter; an ammeter for each phase; a graphic wattmeter; a plug switch for reading the voltage of each phase, both across the arc and across the low-tension leads outside the furnace; the operating handle of the high-tension circuit breaker; the inverse-time-element relays for the circuit-breaker; and an integrating kilowatt-hour meter. On the other side of the regulator is mounted a small panel carrying the switches and meters for the motor-generator set, below which is the motor auto-starter.



FURNACE TILTED FOR POURING. THIS MOVEMENT IS CONTROLLED BY THE MOTOR THROUGH THE MEDIUM OF GEARING

When the charge is finished, the whole furnace is tilted bodily for pouring. This tilting is effected by an 11-horsepower alternating-current slip-ring motor located in a pit beneath the furnace and geared to the tilting mechanism. It is controlled by a drum controller by the side of the furnace.

A chart is being circulated to the trade by the Brown Instrument Co., Philadelphia. On one side, the melting points of 50 chemical elements from nitrogen to carbon, are given, together with a color scale which suggests the relation between heat colors and temperatures. On the reverse side of the chart are conversion tables ranging from 0 degrees Cent. and 32 degrees Fahr. to 1600 degrees Cent. and 2912 degrees Fahr.

CASTING ALLOY STEEL INGOTS. THE CHARGE IS TRANSFERRED FROM THE FURNACE TO MOLDS BY MEANS OF THE BULL LADLE WHICH IS TAPPED FOR CASTING

More Plants Rise in Northwest

Shipbuilding the Basis of Many Industries—Pacific Coast Still Leads With Vessels —Eastern Companies Establishing New Branches—Pig Iron Supplies Restricted—Ferromanganese Plant Started

(Special Correspondence)

SEATTLE, Wash., Oct. 24.—The shipbuilding industry of the Northwest which came into existence by reason of the war grows stronger daily and is stimulating or initiating industries in remote sections of the Northwest. At Great Falls, Mont., operations have been started at the electrolytic ferromanganese plant of the Boston and Montana reduction works, Anaconda Copper Mining Co., and one furnace has been fired. The works consist of five furnaces and when all are operated they will produce 90 tons of ferromanganese daily.

The plant will consume 250 tons of carbon electrodes monthly and will require five carloads of manganese ore, two carloads of coal, one carload of lime rock and one-half of a carload of iron ore daily. The charge of the furnace will be mixed in the proportion of 500 pounds of manganese ore, 170 pounds of coal, 70 pounds of lime rock and 20 pounds of iron ore. The manganese ore will be brought from the Butte mines of the Anaconda Copper Mining Co.

The output of the plant has been contracted for by the United States government for an indefinite period and will be used in the manufacture of ordnance steel. The plant at Great Falls was constructed at the request of the government that ships carrying ore from Cuba and South America might be released for war purposes. The cost of the works exceeded $500,000.

By-Product Plant Nears Completion

The Granby Consolidated Mining, Smelting & Power Co., Anyox, B. C., expects to have its by-product plant at Graves Point, B. C., for which $1,250,000 is being spent, ready for operation by Jan. 1. It will have a capacity of 10,000 tons of coke per month which will about meet the company's smelting requirements. It is estimated that this will mean a saving of $5 a ton on coke or a yearly saving of $500,000.

A region that is attracting much attention on account of promising prospects for chromite ore is that adjacent to Del Norte, Cal., and Curry county, Oreg. This ore is used to a great extent in munition making and the geological survey urges co-operation and activity with a view to increasing the output of this region to meet the needs of the country.

The Pacific coast continues to lead the Atlantic in the matter of shipbuilding, having completed new vessels aggregating 1,000,000 tons up to Sept. 14. Deliveries included 137 vessels from the Pacific coast of 1,011,160 deadweight tons as compared to 87 vessels of 634,860 deadweight tons from the Atlantic coast. In vessels launched but not completed the Pacific coast also leads with 134 of 610,900 deadweight tons compared to the Atlantic with 69 of 352,816 deadweight tons.

Between Aug. 1, 1917, and Sept. 1, 1918, 105 steel ships built at Pacific coast points were delivered to the United States shipping board. Of this number the eighth shipping board district, embracing Oregon and Washington and with plants at Seattle, Tacoma and Portland only, delivered 72 steel ships of a total deadweight tonnage of 595,000 while the seventh shipping board district embracing California, with plants at San Francisco, Oakland, Los Angeles and Long Beach, delivered during the same period 33 ships of a total deadweight tonnage of 312,245.

Of the tonnage delivered to the shipping board up to Sept. 14, Seattle delivered 399,900 deadweight tons or one-fifth of the 2,049,375 deadweight tons delivered by the entire country. Seattle's newest steel yard, that of the Seattle North Pacific Shipbuilding Co., recently made a world's record for a new yard's first launching when the 9400-ton OZETTE was launched in 84 working days.

Oregon yards are also making splendid records in construction. In the yards of that state 127 ships are now in process of construction with an aggregate value of $84,525,089. Under government contracts are 82 wooden vessels valued at $34,555,769 and having a gross tonnage of 281,740. Also under government contract are 37 steel vessels, valued at $43,660,000 and of 253,700 gross tonnage. Eight private steel ships are being constructed, valued at $6,409,320 and of a total tonnage of 59,800.

Wooden shipbuilding on the Pacific coast has experienced enormous development from an almost obsolete business of a few years ago. Since the beginning of the European war an immense amount of capital has been invested and the yards established have capacity for producing 3,000,000 tons of ships annually. Wooden yards capable of building large ships have a total of 184 ways with a total yearly capacity of 554 vessels. The wooden yards of the coast have launched a fleet of 280 vessels, 90 of these having been launched during the last three months. The great majority of these yards are in Oregon and Washington in close proximity to the abundant timber supply, although Los Angeles and other points far removed from the timber supply are building wooden ships. Seattle has 10 wooden yards, Tacoma five, Olympia two, Grays Harbor four and there are many others. Portland has eight wooden yards, Astoria three, St. Helens one, and altogether there are 17 yards in the Oregon district building wooden ships. Most of these are large yards as are those at Seattle and at other points in Washington. As an indication of the importance of this industry in the Northwest and the skill and speed of those engaged in it, the Grays Harbor Motorship Corp. cut the world's record from 47 working days to 18 in launching the 4000-ton wooden steamship ABERDEEN, Sept. 29, at Aberdeen, Wash.

New Branches Established

To better handle the great and growing volume of business incident to this industrial activity many prominent eastern concerns have established branches in the Northwest. Among the recent arrivals is the American Steel Export Co., of New York, which has opened offices in Seattle. Mathew R. Rosse, one of the company's representatives, has charge of all sales in the Far East, and H. B. Brown, Pacific coast freight agent, has charge of all shipments to the Far East. The sales of structural and finished steel to the Orient last year alone approximated $15,000,000 and practically all of this Oriental freight passes through the port of Seattle. The demand for steel of all kinds in the Orient has been unprecedented but the needs of the United States for war purposes have necessarily limited the amount of business that might be done in steel. An enormous after-the-war business is expected through this port.

The pig iron situation in the Northwest promises to clear in the near future but at the present time is rather difficult. The amount procurable from the East has been restricted and the local demand increased at least 40 per cent, bringing about a serious condition that will become decidedly embarrassing if not relieved within the next six weeks. The Skinner & Eddy Corp., Seattle, due to increased activity at its shipyards, is using twice the pig iron it did six weeks ago. The American Foundry Co., organized by Sumner K. Prescott, E. L. Prescott and others, with offices in Seattle, has completed its foundry here and is using 250 tons of pig iron per month. The Northwest Motor Co., Seattle, is completing a large foundry on the tide flats. The government has come to a better understanding of the needs of the Pacific coast in the matter of pig iron and the promise has been given that requirements of the section will be met promptly in the future.

The coke situation is somewhat improved, a reasonable amount coming through from the east, while there is an abundance of local or Wilkeson

and Carbonado coke. Some coke has been brought in recently from Fernie, B. C., but has proved to be of poor quality.

No solution has yet been found for the scrap problem. Some has been brought to Seattle and other Northwest centers from Idaho and Montana. The Northwest is being scoured for scrap and even the Boy Scouts are being enlisted in the search. Some relief may come from the fact that a government order has been issued prohibiting further exports of scrap and second hand machinery.

In the matter of the market there is not much activity. One Seattle firm reports the sale of 700 tons of pig iron at $33 base for delivery the first half of 1919. Considerable brass and copper tubing is being sold, also steel bolts and nuts. Steel bars are being quoted at 4c and iron bars at 3.50c to 3.75c at mill. The embargo has had the effect of holding exports to the minimum and there is little activity in this respect.

There is considerable unrest among shipyard workers particularly at Seattle. The Macy award board which began its sittings at Philadelphia Aug. 5 with a view to making adjustment of wages in the shipyards has not reported to date. In the meantime members of the Metal Trades Council are taking Saturday afternoons off against the express wish of the President of the United States, and are standing pat on a 44-hour week. Some 18,000 men refused to work in the Seattle yards on Sept. 21, resulting in the charge by V. Everett Macy, chairman of the wage adjustment commission of the United States shipping board, that the Metal Trades Council had broken its agreement covering a four months' period of Saturday half holidays, which began May 15. The council in taking its stand for the 44-hour week also stated that hereafter no member of the union affiliated with the council would be permitted to work more than four hours on any Saturday unless paid double time for all time in excess of four hours. The metal trades council insists it is entitled to a decision by the Macy board although President Wilson is understood to have asked that the decision of the board be deferred until there can be an adjustment of all war working conditions.

There is a shortage of labor, particularly at Seattle, and some of the plants engaged in war work are being seriously handicapped. Every effort is being made by Federal Director Lawrence Wood of the employment service to secure more help and the war industries community labor board is making a survey of all nonessential industries in the city to determine the number of men who can be transferred from such nonessential employment to war industries.

In the meantime clearance of the first 1500 dwellings of a total of 5000 of various types to be built through the co-operation of the more homes bureau of the chamber of commerce and Commercial Club of Seattle has been granted by the building materials section of the war industries board. Portland recently gave to A. Merritt Taylor, director of transportation and housing for the Emergency Fleet corporation, guarantees that 2000 homes for workmen will be constructed before Jan. 1. Activities of this nature are being carried on in every shipbuilding center in the Northwest, thereby taking a long step in the direction of making the industry permanent.

Mill Supply Men United for War Service

THE hardware and mill supplies industry of the country has been organized in a single body for war service. The manufacturers of mill supplies have joined the hardware manufacturers' organization in this movement and the American Supply and Machinery Manufacturers' association has also merged its war service activities with that organization.

An announcement by the American Supply and Machinery Manufacturers' association states that in response to the war industries board's appeal for the organization of all industries for war service the association has undertaken the work of organizing the manufacturers of mill supplies. It was decided that this could be done most effectively by adding the industries to the already established and recognized hardware manufacturers' organization for war service. The merger was then made complete by the association placing its war service activities in charge of the organization, because the latter already has a staff of representatives at Washington in effective co-operation with all government departments.

A system has been worked out whereby the organization's officers and representatives at Washington are kept in touch with every feature of the war production situation as it affects the industries. The service pertaining to hardware has been divided into divisions and sections, one section dealing with wire goods and heavy hardware, another with builders' hardware, metal ware, small castings and stampings and others dealing with cutlery, hardware tools, agricultural tools and general hardware. The service for the mill supply divisions is divided into sections as follows: Metal workers' tools; power transmission; steam, water, air and gas supplies; miscellaneous machinery and general mill and foundry supplies.

Keep in Touch With Trade.

The operation of the system is similar to that worked out by the resources and conversions section of the war industries board for keeping the board informed as to the capacities of the various industries. Matters pertaining exclusively to one division are referred to a division delegate while matters pertaining to more than one division are referred to a section committee, these in turn are referred to the policies administration, then to the executive committee of the general war service committee and finally to the president of the organization. Financial matters are referred to the secretary-treasurer before going to the policies administration and service matters are first referred to an executive manager.

When the enlarged organization is completed it is estimated that it will be composed of 30 groups of competitors manufacturing hardware exclusively, 40 who manufacture mill supplies exclusively, and 80 who manufacture both hardware and mill supplies, the aggregate representing hundreds of companies and many thousands of individuals.

Federation of Competitors

The plan is described by the organization as follows:

The plan of organization is broad and democratic. It is a federation of groups of competitors. Each distinct group organizes in whatever way it desires and elects a delegate to represent it in the organization. Each organized group, termed a division, decides for itself how it can most effectively serve the government; it takes up and settles all questions which affect itself alone. Groups whose productive facilities are similar to each other are grouped into sections. The delegate from the section committee by majority consent elects a section chairman who is automatically a member of the general war service board, which board dictates the policies of the organization.

The officers of the organization are: President, Charles W. Asbury, Enterprise Mfg. Co., Philadelphia; assistant manager for hardware, P. H. Robinson, Washington; assistant manager for mill supplies, R. E. Clarke, Washington; secretary-treasurer, F. D. Mitchell, New York; general war service committee, composed of executive committee and chairmen of section committees, Fayette R. Plumb, Fayette R. Plumb, Inc., Philadelphia, chairman; Frank Baakes, American Steel & Wire Co., Chicago; A. W. Stanley, Stanley Rule & Level Co., New Britain, Conn.; chairmen of section committees, Charles E. Sanders, Parker Wire Goods Co., Worcester, Mass.; Harry B. Curtis, Bridgeport Hardware Mfg. Corp., Bridgeport, Conn.; Henry B. Sargent, Sargent & Co., New Haven, Conn.; Charles F. Rockwell, Miller Bros., Cutley Co., Meriden, Conn.; J. S. Bonbright, Pennsylvania Lawnmower Works, Philadelphia; E. Bertram Pike, Pike Mfg. Co., Pike, N. H. An executive manager is to be appointed.

While existing conditions caused the cancellation of the October meeting of the New England Foundrymen's association, the November meeting will be held at the Exchange club, Milk and Batterymarch streets, Boston, Wednesday, Nov. 13.

Production Problems Are Attacked

Better Assortment in Ship Steel Shipments Arranged for at Conference of Mill Representatives and Shipping Board Officials—Unfavorable Coke Situation Leads to New Efforts to Stimulate Output

WASHINGTON, Oct. 29.—Expediting of steel ship production through sequential delivery of sections and forms to the yards are being discussed today at a meeting of order department heads of steel plants with members of the steel division of the war industries board and the Emergency Fleet corporation at the war industries board. This is the meeting which was to have been held on Oct. 17 in Philadelphia but was postponed on account of the epidemic of influenza.

While the session is not being attended largely, it is recognized as an unusually important one. For some time there has been a delay in completing steel ships because of the lack of odds and ends in the way of sections and forms, which, while small items in themselves, are necessary to finish the vessels. To overcome this plans are being taken up to provide delivery of all sections of the vessels according to the order in which they are required for purposes of construction. The mills are being advised as to how to produce with this purpose in mind. They have practically reached the peak of production so far as the most important steel parts are concerned and at some yards there is an excess of this tonnage. The delivery of "lags" now is being provided for so as to prevent any delay in building vessels and to permit faster consumption of material on hand.

While standardization in itself is not forming any part of the discussion, that question gradually is being crystallized into a more definite shape through problems now considered and no doubt will be the subject of future conferences with sweeping plans for general construction for different branches, including the army, navy, Fleet corporation and railroads.

It also is understood that the question of eliminating some of the smaller steel yards is being given serious consideration. This subject has originated from the fact that these yards have failed to produce ships and apparently are in no position to execute contracts. In no way is the situation due to a lack of steel. By eliminating such yards as those mentioned, however, greater tonnages of steel will become available for the shipbuilding plants which have proven themselves efficient.

Pressing and growing demands make it necessary that everything possible be done to supply greater tonnages of pig iron. With this situation in mind, Warren S. Blauvelt, director of the bureau of coke, United States fuel administration, late last week was appointed a member of the production committee working under James B. Neale, director of production. The special duties of Mr. Blauvelt in this capacity, which in no way will affect his present work, will be in the line of increasing and maintaining the production of coke, which is essential in order to obtain greater output of pig iron. Not only will it be his duty to increase and maintain coke production, but he also will do everything possible to see that the quality of coke is improved wherever it can be done. This latter question is recognized both by the fuel administration and the steel division of the war industries board, as being extremely important.

Special emphasis has been laid on the necessity for a large and steady coke output by the production committee. Coke production, it is announced by the fuel administration, has been running about 30,000 tons weekly below the minimum required for the government program. This represents a weekly loss of between 20,000 and 25,000 tons of pig iron. Both operators and coke workers have been asked to co-operate toward overcoming the deficit. Additional labor at the coke ovens and 100 per cent efficiency on the part of coke workers and executives are relied upon to make up the shortage.

Eliminate the Non-Producing Shipyards

WASHINGTON, Oct. 29.—Both steel and wooden shipyards which have failed to produce ships and are not in a position to meet contracts they have to build vessels for the government are to be eliminated. It is not known what number of steel shipyards will be affected but it probably will be small; between 15 and 20 wooden ships, according to reports, will be eliminated.

Decision to this effect is said to have been reached at the conference here last Thursday participated in by Chairman Edward N. Hurley, of the United States Shipping board, and Director General Charles M. Schwab, and Vice President and General Manager Charles Piez, of the Emergency Fleet corporation. By this system it is hoped to bring about the most efficient and quick production of ships. It will permit of concentration of work at those yards which are performing their contracts satisfactorily, and in the case of steel yards will make it possible to divert tonnages from non-producing plants to the producers.

On the same day of the conference announcement was made that contracts for 50 wooden barges and 50 wooden and steel tugs for the New England coal trade have been cancelled by the shipping board. Chairman Hurley stated the vessels would not be needed, inasmuch as it had been found possible to use some of the 3500-ton wooden ships for this service. Work had not been started on the contracts which involved $25,250,000.

Readjusting Ship Program

It was also announced by Mr. Hurley that about 100 wooden ships now building will be so designed that they can be used in the oil trade between Mexico and the United States, releasing large steel tankers now in that service for overseas trade for maintaining supplies of fuel for the allies' armies and navies. A number of wooden ships which were to have burned coal will be remodeled so as to burn oil. General readjustment of the wooden ship program, as a matter of fact, is being considered, with a view, it is said, of a sharp limitation of the output of this class and the substitution of steel ships. It is understood that the matter of steel supply enters largely into the determination. This will be the subject of a conference next week in Philadelphia.

The completion and delivery of the freighter AGAWAM by the Submarine Boat Corp., Port Newark, N. J., the first steel fabricated ship accepted, has been a source of much gratification to the shipping board, indicating a constant flow of fabricated ships from now on. The vessel was formally accepted last Tuesday. The Submarine Boat Corp., has undertaken the building for the fleet corporation of 150 ocean-going vessels of the same size and type as the AGAWAM. From the 28 construction ways in the Newark Bay shipyard it will be possible to launch fabricated hulls like the AGAWAM on an average of at least two, and possibly three, every week. Delivery of completed ocean-going steamships, ready for sea, from the fitting out docks can be insured at the same rate.

The deadweight carrying capacity of the AGAWAM is 5000 tons, but when loaded to her plimsoll mark she has a displacement of about 7800 tons. Her length is 343 feet, beam, 46, and speed 10½ knots an hour. The vessel is an oil burner.

Approximately 27 steel mills, 56 fabricating plants, and 200 foundries, machine, pipe, joinery and equipment shops

engaged in the production of the parts of the AGAWAM. The vessel was built from structural steel shapes such as were used in the past only for the construction of bridges and office buildings. The various steel parts of the vessel's hull and superstructure were fabricated as completely as practicable in structural steel shops throughout the country and then assembled at the Newark Bay shipyard. The AGAWAM received her Indian name, meaning "Great Salt Meadows," from Mrs. Woodrow Wilson. Miss Erma Schwab, a niece of Director General Schwab, christened the craft on Memorial day of this year. The keel of the AGAWAM was laid Dec. 20, 1917.

Naval Program Expanded

WASHINGTON, Oct. 29.—Heavy requirements of steel will be necessary in connection with proposed naval expansion asked for by Secretary of the Navy Daniels, and for orders recently placed by the motors and vehicles division in the office of the director of purchase and storage, war department, to supply the motor transport corps.

Secretary Daniels appeared last week before the house committee on naval affairs and recommended in the estimates of the navy department for the next fiscal year authorization for the expenditure of $600,000,000 upon a second three-year program of naval construction that will comprise 156 vessels, including 10 battleships and six battle cruisers. This is in addition to the 156 vessels that were provided for in the three-year program embraced in the naval appropriation act of Aug. 29, 1916, all of which are required to be under construction before July 1 next, and is designed to be carried out as shipbuilding facilities become available for further work.

Of the total expenditure of $600,000,000 asked in the new three-year program, $200,000,000 is to be expended the first year. Including the $600,000,000 just asked for, the total estimates of the department for ship construction, including armor and armament, amount this year to $972,090,000. The amount recommended for appropriation next year for ship construction, that is, for completing vessels already authorized and for new vessels is $572,090,000.

Contracts for motor trucks, chasses, ambulances, trailers, tractors, passenger cars and bicycles placed by the motors and vehicles division amount to approximately $130,000,000. The orders placed call for 800 three and one-half-ton trucks; 202 two-ton trucks; 500 one and one-half-ton trucks; 6250 three-ton chasses; 2100 two-ton chasses; 565 one and one-half-ton chasses and 4000 militors, while 1200 AA chasses have been ordered and also 24,950 class B chasses for which the government will furnish the 11 major units.

Contracts also have been placed for 3584 ten-ton trailers and 150 four-wheel trailers. Orders for 13,500 four-wheel drives have been placed which are handled as amendments to ordnance contracts. Other orders include 8000 standard Ford five-passenger cars; 1000 Dodge five-passenger cars; 300 Dodge winter cars; 558 limousines; 3000 delivery cars; 18,775 motor cycles and 25,000 bicycles. Deliveries on these orders are to begin immediately in some instances and will extend over a period of several months.

Expedite Steel Shipments

WASHINGTON, Oct. 29.—Shipments of structural steel which are to be fabricated while enroute to their destinations are affected by the instructions issued last week by the division of traffic to the freight traffic committees, under authority of Railroad Director General William G. McAdoo, for the establishment of "universal" transit. Under this system outbound shipments from a transit point will be allowed to move over any line regardless of the one hauling the inbound or so-called raw product to the transit point, providing such arrangements can be confined to direct routes, and that nothing under such extension shall create circuitous or unduly out-of-route transportation. The purpose of the ruling, to be made effective as early as possible, is to expedite shipments by avoiding movements over circuitous routes.

Under private operation of the railroads the granting of transit privileges was based on commercial necessities existing at certain points but carried a restriction which forces the outbound product to move over the same railroad that handled the raw or semi-finished product into the transit point. Under conditions that exist today, where there is unified control and operation resulting in a single system of railroads for all practical purposes, the restrictions that operated under private control could not be continued without a material loss in transportation, such as switching at transit points, loss in car days, and the use of circuitous routes to force the outbound product to the railroad or system that handled the inbound product.

In a statement authorizing the new arrangement, Director General McAdoo said:

Tariffs restricting the application of outbound shipments to the roads hauling the inbound, or tariffs in any wise in conflict with the foregoing, shall be corrected, and where necessary to establish joint rates in order to apply the "universal" transit system, such joint rates are to be established as soon as possible.

Existing transit arrangements involving circuitous routes and back hauls shall be abrogated; or a proper charge therefor made, before doing which, however, associations or individuals enjoying such privileges are to be consulted, so that the abrogation, or the making of a charge, may be brought about with the least possible interruption to current business and the matter worked out harmoniously.

It should be understood that where there is a transit charge in effect today it is not to be disturbed at this time, the question of applying a charge for transit service generally throughout the country, or the elimination of the existing charges, being a matter for future consideration.

The suggestion is made that individuals, firms and organizations which are now enjoying, or are interested in, the general transit question, keep in close touch and cooperate with the various district freight committees which the director general has established throughout the country, to the end that new conditions brought about by the use of universal transit can be put into effective operation as early as possible and without friction.

Brass Shortage at Crisis

Washington, Oct. 29.—A crisis has been reached in the shortage of brass, according to an announcement by B. M. Baruch, chairman of the war industries board. Radical remedial measures are being considered, including the release of soldiers from camps to work in the brass mills and a conservation of brass in all directions, even to the elimination of brass buttons on uniforms.

The requirements of sheet brass for ordnance ammunition, etc., were 2,220,000 pounds a day on Aug. 29, when a survey was made by Everett Morss, chief of the nonferrous tubing section of the war industries board. The incidental requirements were 1,000,000 pounds a day. The production was 1,800,000 pounds a day; the shortage being 1,450,000 pounds a day. The requirements of brass rods totaled 1,140,000 pounds, the production 1,000,000, the shortage being 140,000 pounds a day.

Since the survey was made the situation has grown materially worse, due to the epidemic of influenza among employes of brass mills, according to the statement. Production is 40 per cent below the demand. In addition to release of soldiers to make up for the shortage of labor these measures are being considered:

The war and navy departments to eliminate to the utmost possible extent the use of brass in various accoutrements and equipment for the army and navy. Major General Goethals, chief of the division of purchase and supplies of the war department, and a member of the war industries board, has already been advised by Mr. Morss that all brass

buttons on uniforms must be abolished as there is not enough of the metal available for this purpose.

A more vigorous pruning by the government of its demands for other uses, and the employment of sharper restrictions to prevent the various departments from demanding more than their actual needs. Specifications must be revised. This is all coincident with further curtailment of supplies going to private industries for civilian uses.

Last week 1000 soldiers from Camp Devens, Mass., were sent into the brass mills of Bridgeport, Waterbury and Ansonia, Conn., and more will be needed. The conclusion reached by Mr. Morss was that even with the mills fully manned production would fall far behind requirements, owing to the lack of machinery and other facilities. Between 20 and 40 per cent of the employes of brass mills have been unable to work because of the influenza.

Capital Odds and Ends

WASHINGTON, Oct. 29.—The war industries board last week announced a final conservation schedule for furniture manufacturers in which is incorporated previous schedules with modifications, effective immediately. Metal ornamental tacks and nails, metal ornamental trimmings and metal wheel castors, metal drawers, metal drawer guides, drawer corner blocks or irons, metal cleats, drawer locks, metal drawer slides, metal dustproof bottoms, metal feet, metal pulls, metal rim fasteners, metal top and base locks, metal dowel pins, metal ferrules, and metal parts on drop leg attachments are eliminated. Each manufacturer is requested to file with the vehicle, implement and wood products section of the board not later than Nov. 10, 1918, a statement showing the number of active patterns as of July 1, 1917, and the volume of business for the year ending Dec. 31, 1917.

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A saving of $193,750 has been effected by the army ordnance department on one contract for 1,250,000 fabric gun slings, according to an announcement authorized by the war department. By investigation of production costs of webbing and metal parts of the slings, the ordnance engineers were successful in reducing a quotation of 82c to 66½c a sling, a saving of 15½c on each sling.

* * *

On Oct. 16, the board of review in the office of the quartermaster general approved purchase orders and contracts amounting to $20,621,176.12. Among the items included in the transactions were crow bars, axes, trench mirrors, motor trucks, motorcycles, nails, shovels, horseshoes, typewriters, screw drivers, razors, bicycles, meat saws, and clothing and groceries.

* * *

Locomotive plants in the United States last month turned out 470 completed engines, 251 for the railroads under government control, 213 for foreign account and 16 for miscellaneous domestic use. The Baldwin Locomotive works delivered 79 for American railways and 198 for foreign, the American Locomotive Co. 166 for the United States and 15 for abroad and the Lima Locomotive Corp. 22 for railroads under Director General McAdoo.

* * *

The war trade board has announced in a new ruling (W. T. B. R. 290) that on and after Nov. 1, all applicants for licenses to export second-hand articles composed of iron or steel will be required to state on form X that the commodity to be exported is "second-hand." Failure on the part of the applicant to describe second-hand material as such will be regarded as an inaccurate description of the goods and the applicant will be subject to the prescribed penalty therefor.

* * *

Heavy war and industrial uses of gasoline have prompted the board to ask for the discontinuance of the manufacture at this time of gasoline stoves. The priorities division in granting priority to the oil and gasoline heating and cooking devices and appliances industry requires a pledge of the manufacturers to reduce consumption of iron, steel, brass, copper and aluminum used in the manufacture of their products to a basis of not exceeding 50 per cent of six-twelfths of the 1917 consumption.

* * *

Announcement has been made by the army ordnance department that production of small arms ammunition, including cartridges for machine guns, rifles, revolvers and pistols, has passed the 3,000,000,000 mark. A grand total of 3,054,160,110 cartridges had been accepted by ordnance inspectors on Oct. 11. Of this number 2,510,628,510 are service ball cartridges for machine guns and rifles, and 275,524,200 are caliber .45 pistol and revolver cartridges. The remainder are miscellaneous cartridges.

* * *

Greater safety for munition workers in their homes, through locating their village settlements at points a safe distance from the plants in which they are employed is the policy involved in the contracts recently let for 500 ready-cut bungalows and 30 dormitories to be used in housing workers not now provided for but to be used in the South Amboy, N. J., section about which there are half a score of plants on ordnance contracts. The same plan is to be adopted at other points.

Large Demands

Continue for Refractories—Production Affected By Influenza Epidemic

Pittsburgh, Oct. 29.—No letup is observed in the demand for refractories. On the contrary, requirements, particularly from the iron and steel industry, still are large and insistent and manufacturers are rushed, since plant operations are restricted to some extent by the lack of sufficient labor and because of a loss of some of the available force because of the influenza epidemic. Prices are unchanged on all kinds of brick, with the tone of the market firm.

As was intimated in THE IRON TRADE REVIEW of Oct. 17, a supplement to preference list No. 2 of the priorities division of the war industries board has been issued, in which the word "refractories" is substituted for "fire brick." In the definition of refractories, however, no mention is made of chrome brick and the trade is puzzled as to the reason for the omission. Some are inclined to believe this grade was overlooked and that a correction will be made later. Others think the omission intentional and due to the confusion that exists with regard to the chrome ore situation.

William A. Stanton, vice president of the General Refractories Co., New York and John F. Roberts, manager of the Stockton Fire & Enamel Brick Co., San Francisco, have been added to the war service committee of the refractories industry. This committee now is composed of five members of the trade, the others being Judd J. Brooks, of the Harbison-Walker Refractories Co., Pittsburgh; R. D. Hatton of LaClede-Christy Clay Products Co., St. Louis, and P. S. Kier, of the Kier Fire Brick Co., Pittsburgh.

Production of refractories in the Kentucky and southern Ohio districts has been seriously affected by the influenza epidemic.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK (First Quality)	
Pennsylvania	$45.00 to 55.00
Missouri-Illinois	55.00 to 65.00
Ohio	45.00 to 50.00
Kentucky	45.00 to 55.00
New England	55.00 to 65.00
FIRE CLAY BRICK (Second Quality)	
Pennsylvania	$40.00 to 50.00
Ohio	35.00
New England	48.00 to 58.00
SILICA BRICK	
Pennsylvania	$50.00 to 60.00
Chicago	55.00 to 65.50
Birmingham	45.00 to 55.00
MAGNESITE BRICK (Per Net Ton)	
9 x 4½ x 2½	$105.00 to 115.00
CHROME BRICK (Per Net Ton)	
9 x 4½ x 2½	$130.00 to 140.00
BAUXITE BRICK (Per Net Ton)	
55 per cent	$ 40.00 base
70 per cent	100.00 base

Labor Reaps Benefits; Few Strikes

Situation More Tranquil for Present as Employes Reap Benefits of 8-Hour Day and Extra Wages—Employers Studying Bethlehem and Midvale Plans—Workers Warned Not to Relax Efforts on Supposition Peace is Near

A BETTER situation with respect to organized labor than that which prevailed during the spring and summer months has become apparent from reports and summaries of conditions in the principal industrial centers. Instead of the reports being recitals of strikes, suspensions of war work and disturbances they now deal with the putting into effect of the 8-hour plan as upheld by the war labor board. Labor, apparently, is appeased for the present, attention being devoted largely to minor details attendant on the general inauguration of the plan. It is true that here and there employes who were unorganized prior to the war are now organizing to obtain the benefits of the 8-hour day, and, in some instances, show a spirit of antagonism, but the general understanding that labor may obtain the 8-hour day with time and a half for all work in excess has served to keep down the number of actual strikes. Threats have been common, and there has been no recourse for the employer but to yield.

The adoption of the employes representation plan by the Bethelehem Steel Corp., and the Midvale Steel & Ordnance Co., has served to focus attention of employers on this means of keeping labor satisfied. Many are studying the plan for the purpose of determining whether it meets the requirements of their particular fields. Some employers frankly confess ignorance of the plan, its operation and purposes; perhaps it holds greater possibilities for them than they are aware; at any rate it shows the desirability of every employer keeping in touch with the very latest thought in this important branch of their business.

The war labor board has directed that a system of collective bargaining be installed in the plant of the General Electric Co., Lynn, Mass. The board has referred the question of the addition of women to its membership to the national industrial conference board and the American Federation of Labor, the nominating organizations. The board was frequently asked to include women in its membership because of the numerous questions arising pertaining to woman labor.

An important element in the labor situation during the past week has been the effect of the diplomatic correspondeence between th United States and Germany. Appeals are being made to workers not to relax their efforts on the supposition that peace is near. That the government recognizes this danger growing out of the peace talk is apparent from the fact that its production manager in the Bridgeport district and one of its representatives from the department of labor have warned employers and employes alike not to slow up on production.

Don't Slacken, Train More Men, is Warning

MAJOR B. A. FRANKLIN, U. S. A., production manager of the district having Bridgeport, Conn., as its center, informed munitions manufacturers of Connecticut and the four counties of western Massachusetts last Friday that they must speed up production.

"Some manufacturers," he said, "seem to have the idea that peace is near, and that idea is detrimental to the interests of the government. You must remember that you have signed contracts by which you agreed to deliver to the government definite quantities of goods at definite times, and most of you have not lived up to your contracts. A crisis exists, and it calls for unlimited exertion on your part, just as it does on the part of your employes."

H. E. Miles of the department of labor told the men present that they had been laggards in solving their labor problems and that the time had come for them to busy themselves.

"Thirty days ago," he said, "the manufacturers of this country were told that within 90 days they must train 600,000 new skilled workers. Thirty days have passed, and these workers have not been produced. That means that in the next 60 days they must be trained and you men must start the work immediately."

Major B. N. Gitchell, U. S. A., recently appointed arbiter by the secretary of war to settle the labor dispute at the Colt's Patent Firearms Mfg. Co., Hartford, Conn., on Oct. 24 made the following award to take effect at once: The men shall work 48 hours a week; six days of eight hours each. All work in excess of eight hours within any one day, or 48 hours in the first week, shall be considered overtime payable at time and a half rate. Double pay is to be given for Sunday and holiday work, and 10 per cent extra to be paid to the night workers. By mutual consent, the working days may be lengthened so as to permit of a half holiday on one day of each week. The revision of rates provided in Major Gitchell's announcement shall in no case operate to reduce wages of any employe.

Board Tells Men to Adopt Collective Bargaining

The national labor board, in the controversy between employes and the General Electric Co., Lynn, Mass., has ordered the reinstatement of 12 employes who had been dismissed before the recent strike. The board sustained the discharge of two men for insubordination. Three of the men reinstated were reprimanded.

The board directed that a system of collective bargaining and shop committees be put into operation. It recommended the adoption of the Schenectady system of hours and wages insofar as applicable to the Lynn locality. Changes in pay are to be retroactive to July 17.

The board, having received many petitions urging the inclusion of one or more women in its membership, and being desirous of protecting in every possible way the interests of many women workers whose cases come before it has referred the question to the National Industrial Conference board and the American Federation of Labor. The board took the position that the nominating organizations should decide the question.

Three hundred employes of the Springfield Aircraft Corp., left the plant without notice Oct. 21 for an increase of wages. At the suggestion of the business agent of the machinists' union they returned to work, their case to be settled later by the war department.

Obituaries

EDWARD J. HAMILTON, general superintendent of the Duquesne works of the Carnegie Steel Co., died Oct. 23 at his home in Duquesne, Pa., of pneumonia following an attack of influenza. He was sick only a few days. Mr. Hamilton who was appointed superintendent of the Duquesne works in 1915, succeeding Homer D. Williams when the latter became president of the Carnegie company, was born in 1867 in Johnstown, Pa. While attending high school Mr. Hamilton at frequent intervals worked at the Cambria Iron Works where he remained until 1887 when he accepted a position with the Lorain Steel Co. at Johnstown. He was identified with the latter company until the flood of 1889 devastated the city. Four months after the flood passed into history, Mr. Hamilton obtained employment at the Edgar Thompson works, Braddock, Pa. He remained at that plant until July 15, 1892, when he was transferred to the Homestead plant of the Carnegie company. In 1897 he was made assistant general superintendent of that plant.

Walter J. Faust, aged 53, for several years superintendent of the Independent Bridge Co., Pittsburgh, died at his home in West View, Pa., Oct. 21.

John G. Nichol, of the Nichol-Straight Foundry Co., Chicago, died Oct. 20 as a result of an attack of pneumonia.

John C. Roubik, secretary of the American Building Foundry Co., and treasurer of the Crex Patent Column Co., Chicago, died Oct. 5, at his home in that city.

Capt. L. H. Bertsch, in the cannon division of the ordnance department, who was vice president of Bertsch & Co., Cambridge City, Ind., died at Washington, D. C., Oct. 13.

Chester Peter Siems, aged 34, chairman of the Siems-Carey Railway & Canal Co., died at his home in New York City, Oct. 23, of pneumonia, which followed Spanish influenza.

Lewis James, who represented the Nicholson File Co., Providence, R. I., in the territory between Philadelphia and San Francisco, died in the Jefferson hospital, Philadelphia, Sept. 30.

Thomas J. Savage, member of the national war labor board, representing the International Association of Machinists, died in Washington last week after a brief illness of influenza. His home was in Everett, Mass.

James E. Harlow, 72, formerly one of the most prominent engineers in Pittsburgh, having been connected for a number of years with the Harlow Bridge Co., died at Darlington, Md., where he had made his home in recent years, on Oct. 6.

William F. Moeller, aged 42, vice president of the Optenberg Iron Works, Sheboygan, Wis., died of cancer at St. Nicholas hospital that city, Oct. 21. He had been connected with the Optenberg Iron Works for the past 20 years.

Willis W. Harding, 30, superintendent of the Filbert plant of the United States Coal & Coke Co., Gary, W. Va., died Oct. 15. He was born in Brookville, Pa., and prior to going to Gary, about 10 years ago, made his home in Wilkinsburg, Pa.

Carl Wilhelm Fors, formerly proprietor of the City Brass Foundry, Worcester, Mass., and for the past five years foreman for the Coppus Engineering & Equipment Co., in that city, died

EDWARD J. HAMILTON

at his home there Sept. 25 at the age of 43 years.

Howard J. Klinzing, for several years connected with the Pittsburgh-Des Moines Steel Co., Pittsburgh, as a contracting engineer died at his home in Knoxville, Pa., Oct. 23, of pneumonia. He was 31 years old and was a native of Pittsburgh.

Frank H. Ensign, president of the Ensign Foundry Co., Toledo, O., died Oct. 23, after a 10 days' illness of influenza. He located in Toledo 32 years ago, removing from Defiance, O., and had been in business in Toledo continuously since that time.

N. B. Willman, of N. B. Willman & Co., Philadelphia, died at his home at Douglassville, Pa., Oct. 17, of pneumonia. Previously to organizing the N. B. Willman Co., 18 years ago, Mr. Willman was blast furnace manager for the E. & G. Brooke Iron Co., Birdsboro, Pa.

B. Austin Coates, assistant treasurer of the Coates Clipper Mfg. Co., Worcester, Mass., died at his home in that city, Oct. 24, of pneumonia, aged 41 years. He was a son of George H. Coates, president of the company and had been connected with it 18 years. He was prominent in the masonic fraternity.

Edgar T. Phillips, aged 41, of Lambertville, N. J., secretary of the Crescent Insulated Wire & Cable Co., Trenton, N. J., dropped dead on Oct. 6 while visiting near his home. Mr. Phillips was formerly vice president of the Crescent Belting & Packing Co., and was made secretary after the concern was changed to the Crescent Insulated Wire & Cable Co. He had been connected with the enterprise for the past 14 years.

Fred M. Denzler, who for the past four years has been sales manager of the Mansfield Sheet & Tin Plate Co., Mansfield, O., died Oct. 17, after a week's illness of influenza which latterly developed into pneumonia. Mr. Denzler was born in Cleveland in 1888 and moved to Bolivar, O., where he resided until about 14 years ago, when he became office boy for William H. Davey, president of the Mansfield Sheet & Tin Plate Co., which was then affiliated with the Carnahan Sheet & Tin Plate Co., at Canton.

Sidney M. Oliphant, former owner of the Oliphant Steel & Iron Co., died at his home in Trenton, N. J., Sept. 18, after a three-day illness, which followed a stroke of paralysis. After the sale of his iron and steel business to the National Radiator Co. Mr. Oliphant retired to give attention to personal affairs. He was born in Princeton, N. J., 52 years ago and was one of the 10 sons of the late General Samuel D. Oliphant, who fought in the Civil war. He was a brother to James V. Oliphant, former president of the Trenton Malleable Iron Co.

Thomas John Davey, aged 47, the eldest of eight brothers who operate the Mansfield Sheet & Tin Plate Co., Mansfield, O., died of pneumonia on Oct. 17. Mr. Davey with his brother James had charge of the hot mill department. It was Thomas Davey who became helper in a rolling mill in Wales, to his father T. P. Davey, learning his trade. When the family located in McKeesport, Pa., in 1888, the father with his oldest sons worked in the Demmler Bros. sheet mill. They then removed to Niles, O., where the majority of them worked for the Falcon Tin Plate Co., controlled by Arms Bros., Youngstown, O. During the next 10 years the brothers occupied various positions and when in 1914, W. H. Davey, then vice president and general manager of the Massillon Rolling Mill Co., purchased the National Rolling Mill Co., Mansfield, the efforts of all eight brothers were combined in the rehabilitation of the business, carrying out the father's wish that all remain together, as a unit. The death of Thomas Davey is the first break in the family since the death of the father in 1914.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

BRIG. GEN. W. S. PEIRCE, head of the administration division of the ordnance department, has been appointed assistant chief of ordnance and as such will have general administrative charge of the ordnance office and will act for the chief of ordnance, Maj. Gen. C. C. Williams, during his absence. General Peirce will be succeeded as head of the administration division by Col. W. W. Gibson, who will also continue his duties as director of ordnance training. Colonel Gibson acted in this capacity during the recent absence of General Peirce overseas. Brig. Gen. C. C. Jamieson, head of the production division, the previous functions of which have now been distributed among the special assistants to the chief of ordnance, has been appointed special assistant to the chief of ordnance, in charge of artillery, ammunition, metal components, but not loading plant operations, vice T. H. Symington, resigned. Col. Earle McFarland has been appointed a special assistant to the chief of ordnance in charge of drop bombs, and trench warfare material, except explosives, propellants and loading operations.

H. H. Elfborg has resigned as consulting engineer and contractor of the Ajax Forge Co., Chicago, after service of 23 years.

William G. Clyde, general sales manager of the Carnegie Steel Co., at Pittsburgh, is recovering from an appendicitis operation at West Penn hospital, that city.

Andrew Carnegie will close his summer estate, Shadowbrook, Lenox, Mass., Nov. 1, and return with his family to their winter home, 2 East Ninety-first street, New York City.

Warren A. Peters who recently resigned as New England sales manager of the Ames Iron Works, Oswego, N. Y., has been appointed sales manager of the Star Expansion Bolt Co., 90 West street, New York.

Walter H. Wood, president of the Wood Foundry Co., Florence, N. J., has turned over the Florence public library building, of which he was the founder a few years ago, for an emergency hospital.

Willis Werner was recently appointed chief chemist of the Republic Iron & Steel Co., Youngstown, O., to succeed T. J. Davies. He will have charge of the blast furnace and the open hearth laboratories.

William C. Curd has resigned his position as contracting engineer in the railroad department of Layne & Bowler Co., Memphis, and has entered the service of the William Graver Tank Works, East Chicago, Ind., in its railroad department.

Edgar J. Reilley, sales manager of the William B. Pollock Co., Youngstown, O., is confined in a hospital in Chicago, with a fractured foot. His foot was caught while he was crossing a draw bridge in that city recently.

Paul G. Cheatham, sales representative of the Baldwin Locomotive Works and the Standard Steel Works, at St. Louis, succeeds A. S. Goble in charge of the Chicago office, Mr. Goble being made southwestern district representative.

W. L. Conwell, vice president of the Safety Car Heating & Lighting Co., New York, has been appointed executive officer of the company to act with the full powers of president. The latter office has been left vacant with the recent death of R. M. Dixon.

Walter C. Mack has been elected president of the Hoover Steel Ball Co., Ann Arbor, Mich., succeeding L. J. Hoover, founder of the company who died a few week sago. F. A. Stivers is the new vice president; M. J. Fritz, treasurer and H. D. Runciman, secretary and general manager.

Thomas Chalmers has been appointed superintendent of the by-product coke oven plant of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., to succeed H. M. Urban, who resigned to become connected with the Woodward Iron Co., Woodward, Ala.

Douglas B. Wesson, formerly purchasing agent of the Smith & Wesson associates, Springfield, Mass., recently taken over by the government and now operated by the National Operating Corp., has been voluntarily inducted into the United States tank service in Gettysburg, Pa. He had been with the Smith & Wesson associates 12 years.

Frank Tissington, engineer with Archibald & Holmes, Ltd., Toronto, Ont., contractors, has resigned to take up new duties with the Coleman Fare Box Co., 1191 Bathurst street, as manager. The latter concern manufactures portable and stationary fare boxes, etc., and also controls the Coleman Tool, Die & Stamping Works, Toronto.

Garret A. Connors Jr., foreman in the employ of the Truscon Steel Co. here, has been named director of safety. C. F. Carr, for a number of years a labor and industrial news writer in this city, has accepted a position in the safety department of the Youngstown works of the Sharon Steel Hoop Co., under E. J. Russert, safety director.

F. E. Smith has become chief engineer with the Barber-Greene Co., Aurora, Ill. He formerly was with the engineering department of the Stephens-Adamson Mfg. Co., of the Granby Mining & Smelting Co., and the American Zinc & Chemical Co. George C. Sanford, formerly of the Elevator Supplies Co., and of the Otis Elevator Co., has become superintendent of the Barber-Greene Co.

Charles M. Schwab, director of shipbuilding, is ill with influenza at his home on Riverside drive, New York City. The physician in attendance states the attack is slight and Mr. Schwab's return to work will take place in a few days.

R. H. Wilson, who has been affiliated with the Walter A. Zelnicker Supply Co., St. Louis, as Houston, Tex., representative, has been appointed assistant to the president with office at St. Louis. For the past 20 years, he has been identified with southern railroad interests, as storekeeper and assistant general manager of the International & Great Northern railroad and more recently as assistant to the president of the St. Louis Southwestern railroad, in charge of purchases. Mr. Wilson is succeeded by E. O. Griffith as Houston representative for the Zelnicker company.

S. M. Goodman has been appointed by the directorate of the American Rolling Mill Co., Middletown, O., to have charge of the work of expediting the production of 155-millimeter gun carriages at the plant of the Mosler Safe Co., Hamilton, O. The contract for 1249 gun carriages has been transferred to the American Rolling Mill Co., with the commandeering of the Mosler company's plant by the government. Mr. Goodman has resigned as secretary of the Middletown chamber of commerce as well as from his other war activities to devote his entire time to the task of producing 100 gun carriages per month.

Frank G. Allen, vice president and general manager of the Moline Plow Co., Moline, Ill., has been made president of the company, retaining the general managership, as a result of the purchase of controlling interest of John N. Willys of the Willys-Overland Co., Toledo, O. Mr. Allen succeeds G. A. Stephens, whose interests were purchased by Mr. Willys. It is stated that the deal was consummated because of the great friendship which has existed for many years between Mr. Willys and Mr. Allen. Tractor production will be expedited so that within six months the daily output will be 600 if the other war orders handled by the plant will permit.

H. Cole Estep, editorial director of the Penton Publishing Co. and engineering editor of THE IRON TRADE REVIEW, is a member of a party of trade paper editors and publishers which sailed for England Oct. 26 on a tour of inspection of British industry under war conditions. The delegation will spend six weeks in the British Isles as the guests of the British government and will be given a close op-

portunity to study from the special viewpoint of the several trades represented what the British have been able to accomplish under the necessities of war. Others in the party include Arthur J. Baldwin, vice president, McGraw-Hill Publishing Co.; H. C. Parmelee, *Chemical and Metallurgical Engineering;* H. M. Swetland, chairman, United Publishers Corp.; E. H. Darbill, *Hardware Age;* Floyd W. Parsons, editor, *Coal Age;* W. W. Macon, *Iron Age;* H. L. Aldrich, editor, *Marine Engineering;* Roger W. Allen, *American Hatter;* David Beecroft, editorial director, Class Journal Co.; Samuel O. Dunn, editor, *Railway Age;* Henry Ford, editor, *Textile World Record;* Allen W. Clark and Frederick W. Cutler.

Capt. James F. Hillman, who prior to the war was associated with his brothers J. Hart, and Ernest Hillman in the J. H. Hillman & Sons Co., iron brokers and coal operators, is back from France and spent a few days in Pittsburgh recently, while on his way to Camp Oglethorpe, Ga., where he is to instruct soldiers in the use of the machine gun. Captain Hillman was cited for gallantry exhibited during the obliteration of the St. Mihiel salient.

Robert C. Byler, who for about four years has been advertising production man for the S K F Ball Bearing Co., Hartford, Conn., has been appointed advertising manager of the S K F Administrative Co., New York City, and will direct the advertising of the S K F Ball Bearing Co., the Hess-Bright Mfg. Co., Philadelphia, and the Atlas Ball Co. of the same city, all of which are controlled by the S K F Administrative Co. Until arrangements are made in New York City, Mr. Byler will remain with the S K F Ball Bearing Co. at Hartford. Horace N. Trumbull, former advertising manager of the S K F Ball Bearing Co., has entered the reserve officers' training camp at New Haven, Conn.

F. J. Ryan has resigned as secretary and treasurer and general manager of the Electric Furnace Construction Co., Philadelphia, disposing of his interest in the company. He has assumed the same titles and duties with the American Metallurgical Corp., Franklin Trust building, Philadelphia, in which he is one of the largest stockholders. Mr. Ryan also is general manager of the Philadelphia Electric Steel Corp., Conshohocken, Pa. S. R. Vanderbeck, who resigned as vice president of the Electric Furnace Construction Co., has been made president of the American Metallurgical Corp. S. H. Ourbacker, electrical engineer and F. H. Shaw, purchasing agent, have resigned their respective positions with the former company to assume similar duties with the Metallurgical corporation.

Robert Hobson, president of the Steel Co. of Canada, Hamilton, Ont., who has been appointed a director of the Canadian Northern railway under the new government ownership regime, has had 17 years' experience in railroad work in which he was engaged up to 1896. He is a member of the American Institute of Mining Engineers and in 1908 was president of the Canadian Manufacturers association. Frank Percy Jones, a member of the newly organized directorate, was for some years in the service of the Nova Scotia Steel & Coal Co., New Glasgow, N. S., and afterwards became general manager of the Dominion Iron & Steel Co. He was appointed manager of the Canada Cement Co. in 1909. Upon the formation of the Canadian war trade board, Mr. Jones was appointed vice chairman.

Ore Shipments

Will Exceed Last Year's—Grain Output Also Increases

According to figures recently compiled and made public by E. D. Brigham, manager of iron ore, coal and grain traffic for the United States railroad administration, iron ore shipments from all ranges in the Lake Superior district in 1918 will total at least 62,500,000 tons, and more will be moved if the weather permits. This will be a slight increase over the total shipments for 1917, which were 62,498,901 tons. The total ore movement to Nov. 1 will be 57,000,000 tons, and it is expected 5,500,000 tons will be shipped during the two remaining months of the year. During November and December of 1917, a total of 8,245,303 tons were shipped.

Grain receipts at the ports of Duluth and Superior up to Oct. 1, according to Mr. Brigham's figures, were 41,023,931 bushels, compared with 16,088,924 bushels last year, which shows an increase during 1918 of 22,436 carloads. On Oct. 24, there were in store at the head of the lakes 18,700,000 bushels. The working capacity of elevators is about 28,000,000 bushels, and there is now enough grain in transit to fill these elevators if no more is loaded.

Owing to the lack of vessels for transatlantic service, beginning midnight Oct. 24, a restriction has been placed on grain shipping through all markets. All grain for ports at the head of the lakes, was put on individual permit basis. More vessels are being provided for grain storage on their last trip this season, and if necessary these vessels will be held at the head of the lakes and taken down at the opening of navigation. In this way, it is possible to provide space for from 20,000,000 to 25,000,000 bushels, independent of elevator storage.

Plans to Build Foundry

The Manitowoc Shipbuilding Co., Manitowoc, Wis., is about to make important extensions to its yards and works. As recently reported, the company acquired 750 feet of dockage adjacent to its present plant by taking over the entire holdings of the Burger Boat Co., which will establish a new plant across the river. The improvements will include a complete new foundry plant to produce ship castings exclusively. Up to this time the Manitowoc company has contracted for its castings with local and outside foundries. Part of the recent acquirement also will be used for the erection of a new fabricating building and a paint shop.

Ford to Make Tanks

In Dearborn, Mich., Tractor Plant—$1,000,000 Addition Being Built

Detroit, Oct. 28.—Henry Ford & Son's tractor plant in Dearborn, Mich., is being converted for the manufacture of 6-ton fighting tanks for the United States ordnance department. A $1,000,000 addition, to cover 180,000 square feet, is being erected to facilitate production, which is expected to reach 25 tanks a day. The first tank is under construction in the present tractor plant and eventually 50 per cent of the facilities of the original plant will be given over to this work. The plant is machining and fabricating all steel sections. The contract is on a non-profit basis.

The Continental Motors Corp., operating plants here and in Muskegon, Mich., will be on a 100 per cent war basis by Jan. 1. The Detroit plant already is doing 80 per cent war work. Orders call for capacity production until the fall of 1919, according to Secretary W. R. Angell.

The Acme Motor Truck Co., Cadillac, Mich., has purchased the plant of the Cadillac Machine Co., increasing the Acme's total assets to $900,000.

The Mueller Metals Co., Port Huron, Mich., has received an additional contract for 750,000 shells and 1,000,000 fuses. O. B. Mueller proposes to increase the working force from 1200 to 1600.

New Members Added

Thirteen new names have been added to the membership list of the American Iron and Steel institute. The new active members elected are as follows:

Clyde H. Haynes, traffic manager, The Brier Hill Steel Co., Youngstown, O.

C. A. Ilgenfritz, purchasing agent, The Brier Hill Steel Co., Youngstown, O.

Charles J. Rice, superintendent, Union Furnace Co., Ironton, O.

Edwin A. Stelf, sales agent, Otis Steel Co., New York City.

The new associate members admitted are as follows:

Henry R. Carse, president, Submarine Boat Corp., New York City.

Harold G. Meadows, president and general manager, New England Steel Castings Co., East Longmeadow, Mass.

Richmond Nicholas, partner, Hickman-Williams & Co., Chicago.

John P. O'Neil, president, Western Foundry Co., Chicago, Ill.

Charles A. Paeschke, president, Geuder, Paeschke & Frey Co., Milwaukee.

Benjamin W. Peterson, president, Dollar Savings & Trust Co. & Warwood Tool Co., Wheeling, W. Va.

Gordon S. Rentschler, managing director and treasurer, Hooven, Owens, Rentschler Co., Hamilton, O.

Henry R. Sutphen, vice president, Submarine Boat Corp., New York City.

John P. Whelan, treasurer, The Western Foundry Co., Chicago.

The T. H. Symington Co., Rochester, N. Y., has closed its Chicago and Baltimore offices until after the war. Correspondence from Chicago territory will be handled at Rochester and from Baltimore at New York.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Steel Industry Buys Many Liberty Bonds

FINAL figures in the fourth Liberty loan have been tabulated. These indicate that the metal trades in many districts came to the front with large subscriptions which rolled up many oversubscriptions. As announced by the trade committees the list of Chicago steel and metal working companies with their subscriptions is as follows:

FABRICATORS AND EMPLOYES

A. Bolter's Sons	$ 25,000	
Central Iron Works	100	
Chicago Bridge & Iron Works	145,000	
Chicago Standard Axle Co.	2,000	
Continental Bridge Co.	500	
Dallas Brass & Copper Co.	49,700	
Dauchy Iron Works	150	
Duffin Iron Co.	7,200	
Fort Dearborn Foundry Co.	300	
Gage Structural Steel Co.	21,650	
Hansell-Elcock Co.	32,100	
O. H. Hill Co.	1,500	
Johnston & Jennings Co.	10,250	
Kelly-Atkinson Co.	500	
Kenwood Bridge Co.	70,900	
Morava Construction Co.	40,000	
Pittsburgh-Des Moines Steel Co.	2,000	
Ralph H. Simpson Co.	3,000	
South Halsted Street Iron Works	66,100	
Strobel Steel Construction Co.	5,300	
Union Foundry Co.	18,700	
Variety Mfg. Co.	5,750	
Vierling Steel Works	50,900	
Wisconsin Bridge & Iron Co.	3,200	
Worden-Allen Co. and Lackawanna Bridge Co.	12,150	
		573,950

FORGING COMPANIES AND EMPLOYES

Carlson Forgings Co.	3,050	
A. Finkl & Sons Co.	58,600	
Fruin Drop Forge Co.	3,400	
Ingalls-Shepard Forging Co.	155,000	
Kropp Forge Co.	25,050	
Octigan Drop Forge Co.	11,150	
Sundberg Co.	7,550	
Symington Chicago Corp.	66,350	
Union Drop Forge Co.	140,350	
Winslow Bros. Co.	231,800	
Miscellaneous	5,550	707,850
Total		$1,281,800

STEEL WORKS

Acme Steel Goods Co.	87,600	
Hamler Boiler & Tank Co.	5,600	
Highland Iron & Steel Co.	20,000	
Phoenix Horse Shoe Co.	50,000	
Pittsburgh Steel Co.	10,000	
Riverside Iron Works	15,650	
Sharon Steel Hoop Co.	1,800	
Simonds Mfg. Co.	71,250	
Wisconsin Steel Co.	1,050,000	
Total		$1,311,900

Youngstown Has Oversubscription

Official fourth loan figures for Youngstown and Mahoning county show that the division bought $15,200,900 of war bonds thereby exceeding the $10,848,700 quota by 40 per cent. The number of subscribers was 58,548, compared with 55,000 in the third loan; 30,774 in the second and 13,590 in the first. More than 40,000 employes of iron and steel and other industrial concerns were fourth loan buyers, subscrbiing a grand total of at least $7,500,000 or half of the total subscription. Large and small corporations bought nearly $4,000,000 of the issue and subscribed an aggregate of $2,100,000 through outside centers.

Indicative of the way each succeeding loan has gained in popularity among the workmen the following table gives the Republic Iron & Steel Co.'s subscription with those of its employes:

LOAN	CORPORATION	EMPLOYES
First	$ 1,263,200	
Second	5,180,000	$ 275,006
Third	2,025,000	1,005,000
Fourth	2,515,000	2,108,500
Total	$10,983,200	$3,388,500

Virtually no effort was made by the Republic company to sell bonds to employes until the third loan. Subscriptions to the fourth loan practically doubled those to the third. In the fourth loan 9460 employes bought bonds in the Youngstown district to a total of $1,656,600, an average of $175. Colored employes of the company in the Birmingham district numbering 1497 subscribed for $94,600 worth of bonds. The campaign was conducted under the general direction of Treasurer H. M. Hurd. It was in direct charge of J. N. Reese, assistant to Vice President J. W. Deetrick. The Brier Hill Steel Co. and employes to the number of about 6200 bought $1,995,000 of bonds. Of this $700,000 was by the company. The average for the men was $210. Steel brick plant masons averaged $508; engineering department $420, and steel mill employes $304.

The leading industrial companies in the Pittsburgh district came forward with their usual large over-subscriptions. The Jones & Laughlin Steel Co.'s subscription for itself and employes totaled $7,000,000. The total for the Westinghouse interests was $6,500,000 of which amount approximately $5,500,000 was subscribed by the employes of the Westinghouse Electric & Mfg. Co. and its subsidiaries. These companies erected a large victory arch over Fifth avenue in Pittsburgh, at the side of which barometers indicated the daily total subscribed. The United Engineering & Foundry Co.'s subscription was $1,200,000. The American Brake Shoe & Foundry Co., Erie, took $200,000; its employes took $700,000.

Cleveland Rolls Up Big Total

Cleveland's over-subscription amounted practically to $13,000,000. The iron and steel and allied industries contributed no small share to that city's successful campaign. This is shown by the following partial representative list:

CLEVELAND FIRMS

	COMPANY	EMPLOYES
McKinney Steel Co.	$3,000,000	$1,075,000
*Otis Steel Co. (without officers)	1,250,000	
Standard Parts Co.	500,000	500,000
Pickands, Mather & Co. (and associated companies)	3,500,000	131,600
M. A. Hanna & Co.	1,025,000	63,600
American Steel & Wire Co.	710,000	1,362,000
Upson Nut Co.	420,000	350,000
Cleveland Cliffs Ion Co.	2,000,000	
*Warner & Swasey Co.	500,000	
Wellman, Seaver, Morgan Co.	100,000	175,000
Cleveland Crane & Engineering Co.	100,000	30,000
Brown Hoisting Machinery Co.	500,000	140,000
Van Dorn Iron Works Co.	200,000	82,000
Standard Steel Castings Co.	125,000	40,000
West Steel Castings Co.	50,000	34,000
Cleveland Furnace Co.	35,000	115,000
Motch & Merryweather Machinery Co.	150,000	2,100

*Company and employes combined.

Preparations already are being made for the fifth loan. This now is promised in March or April, 1919, although by some it is expected earlier.

New England Buys Bonds

New England metalworking companies returned very liberal amounts. One of the best showings was made in the Hartford, Conn., district, where many millions worth of bonds were taken by corporations and their employes. Among the subscriptions were: Colt's Patent Fire Arms Mfg. Co., $445,000, and $33,000 for its Meriden branch; Landers, Frary & Clark, New Britain, $322,350; Stanley Works, New Britain, $262,000; Lake Torpedo Boat Co., Bridgeport, $215,000; Whitney Mfg. Co., $213,700; Billings & Spencer Co., $83,350; Capewell Horse Nail Co., $102,350; E. Horton & Son Co., Windsor Locks, $37,600; Maxim Silencer Co., $24,150; Eagle Lock Co., Terryville, $35,000; Collins Co., Collinsville, $60,450; Rowe Calk Co., Plantsville, $44,450; New Departure Mfg. Co., Bristol, $21,500; Wallace Barnes Co., Bristol, $25,000; Arrow Electric Co., $75,950; Henry & Wright Mfg. Co., $35,600; Asa S. Cook Co., $12,050; Foster, Merriam & Co., Meriden, $38,150; S. K. F. Ball Bearing Co., $50,000; Cushman Chuck Co., $18,650; Landers, Frary & Clark and the Stanley Works each took $500,000 on their own account. Employes of other New Britain concerns among subscribers were those of the North & Judd Mfg. Co., $62,700 and P. & F. Corbin Co., $59,600. The North & Judd Mfg. Co. took $425,000 on its own acocunt. Employes of the Fore River plant of the Bethlehem Shipbuilding Corp., Ltd., Quincy,

Mass., subscribed for $1,000,900 worth of bonds. The Worcester, Mass., district of the American Steel & Wire Co. averaged $155.96 for the 7096 employes. Total subscriptions of employes were $1,106,700, which, with the company's allotment for the district—$400,000—made its total $1,506,700.

Rising Costs Reduce Net of Pittsburgh Steel

Manufacturing costs of the Pittsburgh Steel Co., Pittsburgh, rose from $21,637,699 in the year ended June 30, 1917 to $29,409,725 in the year ended June 30, 1918. This is a gain of $7,772,026 or almost 36 per cent and graphically shows the effect of the war. A resultant decrease of more than 20 per cent is disclosed by the company's annual report, in the net operating profit, although total sales were $5,000,000 higher this year than last.

After deduction of $735,000 paid on preferred stock the balance was equivalent to 54.6 per cent on the $7,000,000 common, compared with 101.09 per cent on this issue in 1917.

The 1918 earnings were charged with $1,238,632 as reserve for depletion while the tax provision was $2,730,122 against $1,823,548 last year. Gross sales in the year were at a new high level with $37,930,842. In 1916 they were $21,848,000 while in preceding years they were less than $12,000,000.

The company's balance sheet shows a cash account of $1,492,660 as compared with $3,541,465 last year. This showing is counteracted, however, by the next account which reveals $3,548,911 invested in Liberty bonds. Accounts receivable fell from over $13,000,000 last year to $2,936,000 in 1918.

Bethlehem Looks Forward

After the recent meeting of the board of directors of the Bethlehem Steel Corp., President Eugene G. Grace made the following statement in answer to questions concerning the outlook after the war: "Contrary to the popular belief the Bethlehem Steel Corp. is not purely a war company. In normal times only 10 per cent of our business is what is known as ordnance orders, and this is on account of our large commercial steel capacity and shipbuilding lines. With the cessation of hostilities shipbuilding would not stop immediately. We have on our books sufficient orders for ships to carry us through the entire year of 1919 at least."

At this meeting it was announced that unfilled orders as of Oct 1, totalled $506,000,000, as against $453,000,000 on Jan. 1, 1918. This represents a substantial increase over the record for Oct. 1, 1917.

Receivers Are Named

The Fulton Steel Corp., 149 Broadway, New York, organized last year to make special steel products, has passed into the hands of receivers. Federal Judge A. N. Hand named as the receivers William Nottingham, Harry C. Beavers and Edward Quirk. In an answer made by the company to the suit of a creditor it admitted inability to pay, but declared that its assets were ample, although they could not be made readily available. The company has a plant at Fulton, N. Y.

The action in which the appointment was made is in equity and was brought by the Primos Chemical Co., Primos, Pa. This procedure was resorted to in order to avoid a bankruptcy, which would have been disastrous for the bankers and stockholders and unfortunate for the city of Fulton. The receivers have full power to conserve the assets and to continue the business of the company to the fullest extent, and for that purpose to borrow money. The creditors and stockholders are required to show before Judge Hand at New York city on Nov. 9, why the business should not be continued by the receivers and such other relief granted which may be necessary and proper.

Buys Additional Plant

The Witherow Steel Co. has purchased and occupied a manufacturing property, consisting of about four acres and factory buildings on the Pennsylvania railroad just east of Jeannette, Pa. The purchase probably is made in anticipation of the time when the company will have to remove from its present site on Neville island. The government has notified the industries located on the lower end of Neville island that they will not have to move to make way for the ordnance plant there until after the war. The Witherow company, therefore, will occupy both plants until after the war.

War Work Taxes Capacity

Naval ordnance and special machinery contracts for the government will keep the Linderman Steel & Machine Co. plants at Muskegon, Mich., Dayton, O., and Woodstock, Ont., at capacity production until July, 1919, according to B. A. Linderman, head of the company. It has authorized common stock of $1,200,000 all outstanding and an authorized issue of $600,000 preferred stock of which $526,200 was retired in June. Total resources were $4,206,315 on Aug. 1; current assets, $1,981,489; current liabilities, $55,716 and working capital $1,425,773. Inventories were appraised at $870,225 on the same date while investment in the local plant, property and equipment were placed at $2,023,543.

Financial Crop Ends

Stockholders of the Chicago Pneumatic Tool Co. have voted to issue $3,250,000 six per cent refunding mortgage bonds, the proceeds to be used for plant extensions.

* * *

The Graton & Knight Mfg. Co., Worcester, Mass., has purchased the property of the E. F. Hunt Co., Inc., builders' finish, adjoining its plant and will use the warehouse for an extension of its business, the greater part of which is government orders. The price paid was about $35,000.

Benzol Sales

Heavy With Orders For Several Million Gallons on Books

New York, Oct. 28.—Sales of spot and nearby benzol again aggregated several hundred thousands of gallons during the past week. Together with sales made during the preceding week producers now have orders on their books for several million gallons and consequently are in a very comfortable position. The market continues to be quoted at 22 to 27 cents per gallon at producers' plants.

Large export orders for phenol continue pending by reason of the failure of the war trade board to take action on applications for export licenses. The market continues to be quoted at 42 to 44 cents per pound at producers plants, and future quotations undoubtedly will be determined by the action which the war trade board takes on these applications.

Numerous contracts for naphthalin for delivery over the coming year have been closed and others are pending. Prices on this business range around 10 cents per pound at producers' plants for flake and 12½ cents for balls. As is usual at this time of the year there is little demand for spot naphthalin.

Toluol is still badly needed by the government, so that only limited quantities are being released by the war industries board for shipment to commercial consumers. Sales of sulphate of ammonia, due to the fact that the government requirements are considerably less than the production, continue to be made to fertili manufacturers and other commercial consumers at $4.50 to $4.75 per 100 pounds at tidewater.

Coke Oven By-Products

Spot	
Per Gallon at Producers Plant	
Pure benzol	$0.22 to .27
Toluol (on sales sanctioned by government) (tank cars)	1.50
Toluol (on sales sanctioned by government) (drums)	1.55
Toluol (for government)	1.50
Solvent naphtha	no market
Per Pound at Producers Plant	
Phenol	$0.42 to 0.44
Naphthalin, flake	0.10
Naphthalin, balls	0.12½
Per 100 Pounds at Seaboard	
Sulphate of ammonia (to fertilizer trade)	$4.50 to 4.75
Contract	
Pure benzol	nominal
Toluol	no market
Solvent naphtha	nominal
Per Pound at Producers Plant	
Phenol	nominal
Naphthalin, balls	$0.12½
Naphthalin, flake	0.10
Per 100 Pounds at Seaboard	
Sulphate of ammonia (for commercial use)	no market
Sulphate of ammonia (for government)	$4.50

Big Tool Orders Belie Early Peace

Ordnance Department Orders for Machinery Aggregate $1,000,000—Tank Manufacturer at Peoria, Ill., Buys $25,000 Worth from Cleveland Dealer—Henry Ford & Son to Buy Tank Making Machinery for Dearborn, Mich.

PERFUNCTORY notice only is being taken by machinery dealers in the various districts of the peace negotiations. Attention is being riveted on the production of tools and equipment for war work plants, although there is a general absence of large lists. Inquiries and orders mainly consist of small lots of machines to piece out shop equipment to expedite production. A noteworthy exception to this is the order for tools, aggregating $1,000,000, placed last week by the ordnance department's small arms division. While no shipping instructions were issued, it is understood this equipment goes to the plants making pistols and other light arms. Other outstanding features of the market are contributed by the tank manufacturers. The Holt Mfg. Co., Peoria, Ill., is a large buyer in both the Cleveland and Chicago markets, while Henry Ford & Son are preparing to turn out large numbers of tanks instead of tractors at Dearborn, Mich. They plan to erect a large addition to their plant for this purpose. It is reported at Pittsburgh that $10,000,000 worth of equipment has been ordered for the Neville island ordnance plant.

In some districts a tendency is noted to withhold miscellaneous inquiry pending definite information regarding a cessation of hostilities but the concensus of opinion is this will not come in the immediate future. Dealers believe that until the government ceases to place contracts and lets up on its buying program, nobody has any right to do else than obey the injunction of Bernard Baruch, chairman of the war industries board to "think war, talk war and make war until the enemy is beaten." The feeling is spreading however that peace will come suddenly and some builders are giving a little thought to the disposition of their product in peace times. Dealers view the matter in a complacent light however, feeling sure a return to a normal basis will mean even better business than they have entertained in several months past.

Some purchasing is being indulged in by the railroads but this class of buying is becoming more spasmodic. The Illinois Central, Baltimore & Ohio and Chesapeake & Ohio roads have been buyers. The Pennsylvania and the Pittsburgh & Lake Erie continue to inquire for miscellaneous shop equipment. Electric crane builders are figuring on several cranes for the Pennsylvania's 1919 requirements. The Bessemer & Lake Erie has bought two 25-ton cranes.

Shipbuilders have apparently filled their requirements. Punching and shearing equipment was bought by W. H. Gahagan, Inc., and the Robert Dollar Co. The latter company ordered some hoists for shipment to the Emergency Fleet corporation's shipyard in China.

Little information is obtainable in connection with the placing of orders for semisteel shells. In Chicago, however, much second hand equipment is being snapped up by the shops which will machine these projectiles. Rathbone, Sard & Co., has a contract for 6,000,000 and is installing machinery to produce 2000 daily. Cincinnati foundries have been assured by the government of their fuel and raw material supplies and it is thought this assurance applies also to equipment for machining purposes.

Canada reports a continued active demand for machine tools. It is stated that present plans include the placing of orders for $500,000,000 worth of shells in 1919. Expansion of steel, munition and other plants is expected to develop a large machinery market. Orders were recently placed in Vancouver and Victoria, B. C., for $16,000,000 worth of steel ships. Other ship orders went to Montreal, Halifax, St. John and other shipyards. An increased demand for shipworking machinery is expected.

Ordnance Department's Orders Total $1,000,000

ORDERS for approximately $1,000,000 worth of machine tools have been placed within the past week by the small arms division of the ordnance department, a portion of which went to eastern builders. Shipping instructions have not as yet been issued, but it is presumed that the equipment will be distributed to plants being allotted contracts for the manufacture of pistols and other light arms.

The situation generally in the east during the past few days has been relatively quiet. Inquiry recently noted for shellmaking equipment has subsided, and miscellaneous demand has only been of fair volume. In fact, trading in the east so far this month has been considerably under that of September. Aside from buying by W. H. Gahagan, Inc., Averne, Long Island, N. Y. and the Robert Dollar Co., 17 Battery Place, New York City, little is being done by the ship building interests. Both of these companies recently have bought considerable punching and shearing equipment from the Cleveland Punch & Shear Works Co., Cleveland. Railroad buying during the past week has been confined chiefly to three companies. The Illinois Central closed on several heavy tools, totaling about $30,000, and the Baltimore & Ohio and the Chesapeake & Ohio, in the aggregate, a like amount.

Through error, THE IRON TRADE REVIEW in its last week's issue referred to adjusters in connection with contracts placed with Thomas A. Edison, Inc., and other eastern companies. This should have been adapters. The Boston Overseas Service is inquiring for miscellaneous equipment, including pipe threading machines, etc. The Barney Ahlers Construction Co., 110 West Fortieth street, will erect a gas defense plant on Governors island, for which some equipment will be required. The Ingersoll-Rand Co., Phillipsburg, N. J., is inquiring for a few tools.

Demand for electric cranes continues light, and correspondingly little business is being placed. Included in the few awards of late is a 5-ton gantry, which went to the Whiting Foundry Equipment Co. for the Jersey

Achievement

Whenever quality must come first, safety counsels

AGATHON
ALLOY STEELS

In engines of war and engines of peace, only highest quality steel is permissible.

In transportation only first quality steel will make for efficiency.

In machine operation first quality steel means economy.

Agathon Alloy Steel Spells Superior Merit.

The Central Steel Co.,
Massillon, Ohio

Branch Offices:

Detroit Office—326-27-28 Ford Bldg., F. Walter Guibert, District Representative.

Cleveland Office—Hickox Bldg., The Hamill-Hickox Company, District Representative.

Chicago Office—1370 People's Gas Bldg., 122 So. Mich. Blvd., C. H. Beach, District Sales Mgr.

Philadelphia Office—603 Widener Bldg., Frank Wallace, District Sales Mgr.

Syracuse Office—621 University Block, T. B. Davies, District Sales Mgr.

Export Dept.—20 Broad St., New York.

"AGATHON" Chrome Nickel
"AGATHON" Chrome Vanadium
"AGATHON" Nickel Steels
"AGATHON" Special Analyses
"AGATHON" Vanadium
"AGATHON" Chrome Steel
"AGATHON" High Carbon

City plant of the Pennsylvania railroad, and an overhead electric crane, placed with the Shaw Electric Crane Co., for Gilbert & Parker, Springfield, Mass. The Robert Dollar Co. placed three hand-power cranes, of 40, 20 and 10 tons capacity, respectively, for a yard at Shanghai, China, which is under contract with the Emergency Fleet corporation. The hoists will be built by the Chisholm-Moore Mfg. Co., Cleveland. Electric crane builders are figuring on several cranes for the Pennsylvania railroad in connection with its 1919 budget. It is understood that the Pennsylvania railroad has postponed plans for going ahead with its new shops at Marietta, Pa., indefinitely.

Locomotive crane builders at this time are in receipt of several inquiries from companies, who apparently are hopeful that their requirements can be taken care of without interfering with government contracts. That the government, however, is leaving little capacity available for outside work is reflected by the fact that the industrial works have been ordered to increase their capacity approximately 50 per cent to aid in handling the increasing needs of the government. Included in inquiries recently issued are six standard 10-ton locomotive cranes for the Allied Machinery Construction Co., 120 Broadway, New York City. The cranes are wanted for delivery to South America in about six months. Fishel & Marks, Cleveland, are inquiring for a 15 to 30-ton locomotive crane; the Liberty Steel Products Co., Woolworth building, New York City, a 10-ton locomotive crane, and the Buffalo Steel Co., Tonawanda, N. Y., a 20-ton locomotive crane.

Aggregate of Small Orders Is Large

ALTHOUGH the machine tool trade in Chicago is not entertaining any large inquiries at present, business continues at a splendid rate and total sales from week to week are surprisingly large, the result of many small transactions. On account of a cut of 25 per cent in production of tractor manufacturers, some cancellations have been met on machines under contract for this class of work. The same is true of equipment bought by truck manufacturers who will face a cut of 75 per cent from Jan. 1. The project of the Baldwin Locomotive Works for a large plant in the Calumet district shows no signs of life, and dealers now believe it will not result in buying of equipment. In order to obtain machine tools for finishing semisteel shells, much of the equipment bought by the concerns recently taking contracts in the west, has been second hand which is more readily available than new machines. The Rathbone-Sard Co., Aurora, Ill., has taken a contract from the war department for the manufacture of 6,000,000 shells at the rate of 2000 per day. These are semisteel shells of the 135-millimeter type and special machinery is being installed to produce them. The Holt Mfg. Co., at Peoria, Ill., is making a large extension and has bought considerable equipment, being engaged now in filling out the assortment. The Rock Island arsenal is taking some small lots of odds and ends, and the International Harvester Co. is completing its equipment for munitions manufacture. It recently took about 20 thread millers from one dealer. A large contract for shell boosters is about to be placed here and inquiries are being made for machines to draw the cases and thread them inside and out. The Chicago Transfer & Clearing Co., Chicago, will build a car shop. The Galland-Henning Mfg. Co., Milwaukee, will build a machine shop addition with a crane runway. The Standard Foundry Co., Racine, Wis., will build a foundry. The International Steel Products Co. of Milwaukee, is planning to erect a 2-story plant at Hartford, Wis. The Christopher & Simpson Iron Works Co., St. Louis, is having plans prepared for a new plant. The Industrial Works, Bay City, Mich., has let a contract for a large car shop. Commissioners of Madison, S. Dak., are preparing to rebuild the municipal light and power plant which was recently burned. The Duluth Globe Iron Works, Superior, Wis., is building a foundry and machine shop in Duluth.

Tank Manufacture Calls for Tools

TANK manufacture produces the outstanding features in the Cleveland machinery market. The Holt Mfg. Co., Peoria, Ill., purchased approximately $25,000 worth of tools from one Cleveland dealer. One of the largest inquiries received in the past few weeks comes from Henry Ford & Son, Dearborn, Mich. Their tractor plant is to produce tanks in quantity and a large number of milling and shaping machines will be required. A large addition is to be built. Miscellaneous inquiry is maintained at a fair rate, being chiefly for one or two machines to fill in plant equipment. The Lees-Bradner Co., Cleveland, is inquiring for one 36-inch x 36-inch x 20-foot planer. The Ohio Steel Foundry Co., Lima, O., is inquiring for lathes and boring mills. The Allegheny Forging Co., Pittsburgh, wants a 42-inch x 42-inch x 12-foot planer. Through the procurement division of the war industries board, the Curtis Mfg. Co., St. Louis, Mo., is asking for one 20 to 24-inch x 6 or 8-foot heavy lathe for rough turning of 155-millimeter shells, two 24-inch x 60-inch engine lathes with taper attachments for draw shanks and one 14-inch x 60-inch plain grinder for grinding draw shanks. Through the same source comes an inquiry for one 90-inch capacity cold saw with 102-inch blade for the Watertown Arsenal, Watertown, Mass. James B. Bowers, South Charleston, O., is asking for a used power hacksaw, The White Co., Cleveland, purchased a tube cutting-off machine. Second-hand machinery inquiry continues in fair volume only. Railroad and shipbuilding inquiry presents a lull and automobile companies which were active a few weeks ago seemed to have filled their requirements. If the Wheeling & Lake Erie railroad carries out its intention to enlarge its repair shops at Norwalk, O., some equipment doubtless will be purchased. The Maccar Truck Co., Scranton, Pa., has received an order for $500,000 worth of trucks and will build an addition to double its capacity. The Noble Motor Truck Co., Kendallville, Ind., finds it necessary to make plans to increase its producing capacity. The American Steel Tube Co., Toledo, O., has purchased the Landers Bros. Co., plant in that city and has increased its capitalization from $50,000 to $100,000 to take care of a government order for several million steel tubes. Little information is obtainable regarding the semisteel shell business. Foundrymen in the Cincinnati district have received word from the government authorities that their supplies of fuel, raw material, etc., are assured. This assurance doubtless applies to equipment required by machine shops which will machine the shells. It is thought that definite action on the semisteel shell orders has been postponed awaiting the outcome of the peace negotiations. While the battleplane built by the Glen L. Martin Co., Cleveland, has been accepted by the government, and the company's plant is fast being placed on a quantity production basis, it is thought that not many tools will be purchased. The plane is the first all-American plane accepted by the government, but parts for it, including the 12-cylinder, 400-horsepower Liberty motors, are manufactured by 50 other concerns in Cleveland and assembled at the Martin plant. About 50 planes will be manufactured by hand while tools are being prepared to produce them in quantity. When Glen L. Martin presented his proposition to the government, he obtained a contract with a clause reading that if the two sample planes he would build proved satisfactory and were accepted, then a contract was to be given him for a quantity of battleplanes the same as the sample. Immediately upon the acceptance of the plane, some government engineers stepped in with suggested changes, but Mr. Martin insisted on standing strictly by his contract.

But little attention, on the whole, is being paid by Cleveland dealers to the possibility of an early peace. The character of the war reports, however, has diverted the thoughts of some into after-the-war channels. A fairly comfortable feeling pervades their acceptance of the idea that a sudden peace will come and force a return to a more normal condition. All admit grave problems are involved but see a large demand for machine tools and equipment in the return to the commercial lines of peace time.

Equip Ordnance Plant

NOTWITHSTANDING reports from Washington that some congressional opposition was developing to appropriations for the government ordnance plant under process of construction by the United States Steel Corp. on Neville island, frequent reports have been heard in Pittsburgh of the placing of contracts for equipment for the plant. It has been reported that approximately $10,000,000 worth of equipment recently was ordered. This covers a number of roughing lathes for shell work ordered from the R. M. Eddy Co.; 10-ton cranes from the Laughlin-Barney Machinery Co.; 120-inch gun lathes from the S. Morgan Smith Co., and heavy ladle cranes from the Alliance Machine Co. Receipt of some of these orders is admitted but a stipulation in the contracts prohibits those who have taken them from making public any details. No information is

WAR SAVINGS STAMPS

vouchsafed at the ordnance department of the Steel corporation about Neville island requirements, either as to the contracts or why there should be so much secrecy regarding them. Fairly numerous inquiries for machinery and tools are coming from the railroads. The Bessemer & Lake Erie railroad is in the market for two 25-ton, 75-foot span cranes for Greenville, Pa., and the Pennsylvania lines west and the Pittsburgh & Lake Erie railroad are asking bids on miscellaneous shop equipment. Matters are quiet in other directions, buyers showing a disposition to await the results of the German peace drive before entering the market. Builders, especially of heavy machinery, are heavily committed and short dates can be quoted on comparatively few lines.

Canada Continues To Buy Munitions

THE demand for machine tools and plant equipment for munitions, shipbuilding and other manufacturing plants continues active throughout eastern Canada and British Columbia. According to word from Ottawa, there is to be no cessation of orders for munitions in the Dominion and it is stated that contracts to be awarded next year will reach a total of about $500,000,000. A number of steel munition and other plants working on war contracts and domestic undertakings are building extensive additions to their works, for which considerable machinery and tools will be required in addition to those needed for replacement purposes. Deliveries of machinery and tools are improving and orders placed four or five months ago now are receiving the attention of manufacturers of tools, whose plants are working to capacity in order to meet the pressing demand for equipment. Tool manufacturers will give no stated date on which deliveries will be made for orders which are being placed at present, as they are giving their entire attention to cleaning up back orders. The new orders will be handled in their turn. Orders have been placed in Vancouver and Victoria, B. C., by the Canadian government for steel ships, valued at $16,000,000, while orders for a large number of steel ships have also been awarded to companies at Toronto, Montreal, Halifax, St. John and other shipyards in eastern Canada. These orders will greatly stimulate the demand for tools, cranes, machinery and other equipment for shipyards as well as for equipment for the vessels which are under construction and to be built. There is also a marked scarcity of ship plate in the Dominion and the Canadian government is looking to the United States to offset this demand to a considerable extent, until the new plant at Sydney has been completed and in operation.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

PORTLAND, ME.—The Auto Repair & Storage Battery Co. has been incorporated to make storage batteries, dynamos, motors, engines, automobiles, machinery, etc., with $10,000 capital by William H. Wetsell, G. E. Erquhart and Carroll S. Skillin.

PORTSMOUTH, N. H.—The Murphy Construction Co., Boston, has been awarded the contract to erect 31 wood houses and other town planning to cost $250,000, for the United States industrial housing commission.

BONDSVILLE, MASS.—The Boston Duck Co. has acquired the Barrett's Junction waterpower property in Palmer and Belchertown, Mass., and will build an additional power plant for its mills.

BOSTON—Plans for alterations to the forge shop of the Trimont Mfg. Co. are being drawn by C. T. Maine.

BOSTON—Frank Hodgdon, a state engineer, has been instructed to prepare plans for a tunnel between South Boston and East Boston, Mass.

BOSTON—The Bay State Seal & Mfg. Co. has been incorporated to make freight cars and meter seals, with $50,000 capital, by Albert G. Ferguson, Franklin W. Smith and Edwin V. B. Parke.

CHATHAM, MASS.—Coleman Bros., Chelsea, Mass., has been awarded the contract to erect an addition to a building for the navy department.

CLINTON, MASS.—The Lancaster Mills is taking bids on an 8-story, 85 x 260-foot storehouse.

EAST BOSTON, MASS.—The Atlantic Works has purchased 105,000 square feet of land on New street, adjoining its works, and will enlarge its plant and make other improvements.

HINGHAM, MASS.—The government is contemplating building a T. N. T. plant to cost $150,000 at the naval magazine.

NEWPORT, R. I.—The navy department is contemplating erecting an administration building to cost $200,000.

NEW LONDON, CONN.—Bids close Nov. 4 for a brick, slab and steel roof foundry, smith and sheet metal shop to cost $105,400 at the submarine base.

PORTSMOUTH, N. H.—The navy department will build a brick, steel, concrete and hollow tile addition to the machine shop in the navy yard to cost $135,000.

SOMERVILLE, MASS.—The American Woolen Co. will build a 4-story and basement, 100 x 270-foot building to cost $200,000 at Boston avenue and the Boulevard.

SPRINGFIELD, VT.—The John T. Slack Corp. is building an addition to its plant to house machinery and apparatus for the dry carbonizing of woolen rags.

WORCESTER, MASS.—The Liberty Crankshaft Co. has been incorporated to make crankshafts and machine tools, with $96,000 capital, by William H. Leland, Albert J. Gifford, Shrewsbury, Mass., and Subbo Nikoloff, Putnam, Conn.

WORCESTER, MASS.—The Carling Turbine Blower Co. has been incorporated to make blower apparatus, with $25,000 capital, by Herman Stake, Axel W. Carlson, George A. Teeling, Carl Bonney and others. It is a subsidiary of the Economic Machinery Co.

PAWTUCKET, R. I.—The Acme Finishing Co. has let the contract for a brick, 2-story, 27 x 38-foot addition.

PAWTUCKET, R. I.—The Arbeka Webbing Co. recently was incorporated in Massachusetts with $85,000 capital by E. B. MacKay, G. E. Troy and K. F. Martin, is planning the erection of a mill.

NEW HAVEN, CONN.—The New York, New Haven & Hartford railroad will build a brick, 3-story, 44 x 150-foot office building, to cost $80,000, in its Cedar Hill yard.

WATERBURY, CONN.—The Waterbury Buckle Co., 872 South Main street,, has awarded a contract for the erection of a 3-story, 50 x 100-foot factory.

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts:

Two arbor presses, 6550½, Boston.
Nine heavy duty lathes, 6580½, Alexandria, Va.
Brazing table and three punch bench shears, 6583½, Boston.
Three bench drills, 6604½, Norfolk.
One lathe and one drill press, 6640½, Mare Island.
Five pneumatic machines, 6641½, Boston.
Six air compressors, 6660½, Norfolk.
Three motor-driven lathes, 6663½, Norfolk.
One electric crane and parts, 6673½, Charleston.
Milling and grinding machines, lathes, shear, etc., 6679½, f.o.b. works.
Two die-sinking machines, 6680½, Norfolk.
One 20-inch shaper, 6682½, Norfolk.
One milling machine 6683½, Washington.
One cylinder borer machine, 6684½, Norfolk.
One milling machine, 6707½, Newport.
One squaring shear, 6709½, Philadelphia.
10 milling, grinding and boring machines and tool grinders, 6711½, Washington.
Polishing, grinding and clamp machines, 6712½, Puget Sound.
One engine lathe, 6713½, Fort Lyon.
One engine lathe, 6715½, San Diego.
One cutting off saw, 6717½, Key West.
One cutting machine, 6723½, San Diego.
Machine tools, including lathes, drills, grinders, tapping machines, hand press machines and induction motors, 6731½, navy yard, Connecticut.

Schedule numbers, dates of opening and places of delivery follow the specifications of the tools.

OHIO STEEL CASTINGS

If your work is such that you must have steel castings

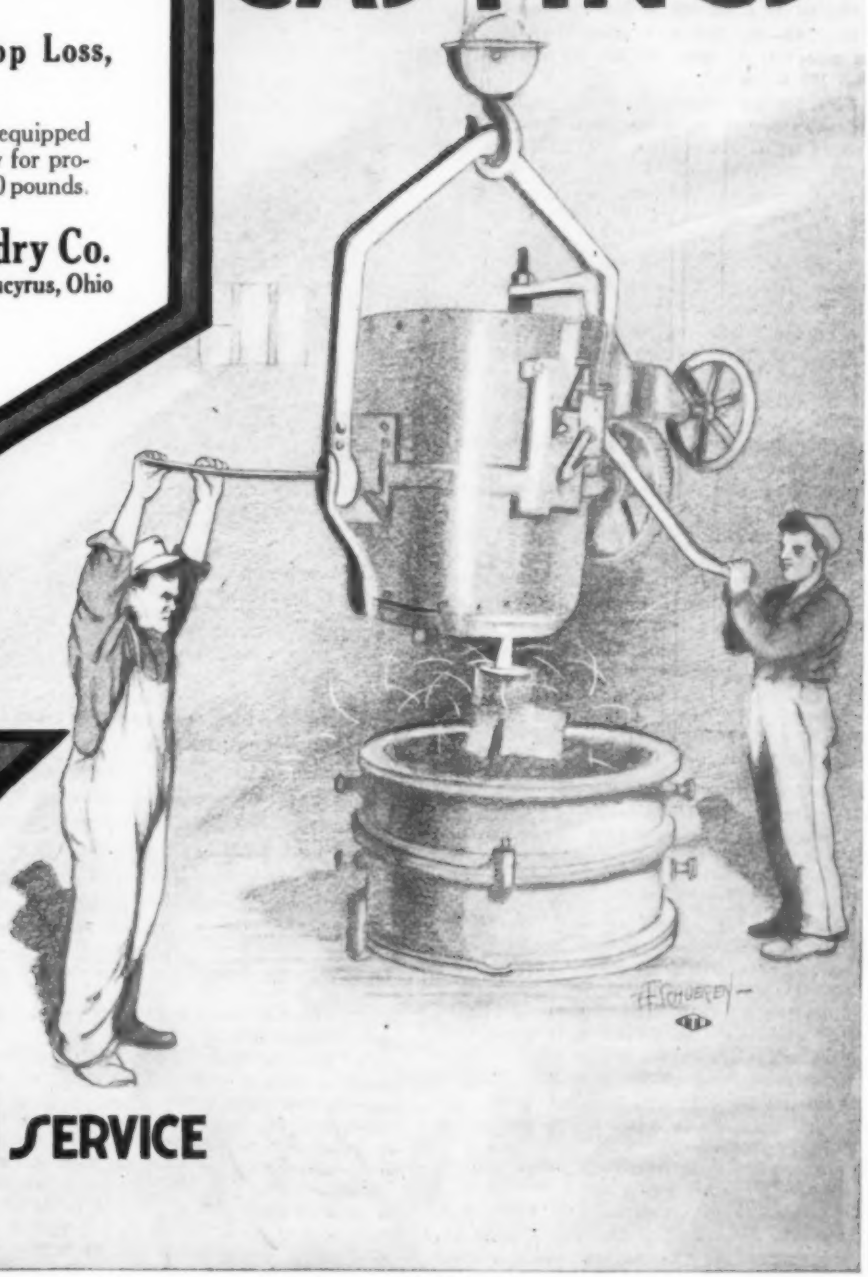
True to Pattern
and
Absolutely Clean

and you would be interested in procuring castings with which you would have a

Minimum Machine Shop Loss,
give us a trial.

Our Springfield Plant is the best equipped and most modern in the country for production of steel castings up to 250 pounds.

The Ohio Steel Foundry Co.
Springfield, Ohio Lima, Ohio Bucyrus, Ohio



PLUS QUALITY HH SERVICE

Along The Atlantic Coast

BOLIVAR, N. Y.—The Pittsburgh, Shawmut & Northern railroad is having plans prepared for remodeling its railway shops here.

BROOKLYN, N. Y.—Work will start shortly on a 1-story, 50 x 50-foot shop addition at the plant of the Electric Welding Co., 744 Court street.

BUFFALO—The Aluminum Castings Co. will build a 1-story plant, 80 x 160 feet, here.

BUFFALO—The American Car & Foundry Co. will build a punch shop here.

BUFFALO—The King Sewing Machine Co. is having plans prepared by R. I. Reidpath & Son for the erection of an addition to its plant.

BUFFALO—W. T. Miller, secretary of the National Aniline & Chemical Co., will have charge of an addition to its plant here to cost $30,000.

BUFFALO—The Metal & Alloys Specialty Co., 25 Illinois street, has had plans prepared for a two-story plant 60 x 100 feet on Marion avenue.

BUFFALO—The Buffalo Airoplane Corp. has let the contract to O. Grupp, 618 Linwood avenue for a plant 100 x 130 feet.

BUFFALO—The Lackawanna Bridge Co. received the general contract for constructing a 1-story, 50 x 100-foot foundry addition for the Strong Steel Foundry Co.

DUNKIRK, N. Y.—The Atlas Crucible Steel Co., Buffalo, plans the erection of an 80 x 100-foot warehouse in this city.

JAMESTOWN, N. Y.—Plans for a 3-story, 60 x 200-foot factory building for the Art Metal Construction Co. have been placed in abeyance.

MAYBROOK, N. Y.—Alterations and additions costing $10,000 will be made to the machine shop of the New York, New Haven & Hartford railroad. The H. Wales Lines Co., Meridian, Conn., will be in charge.

NEW YORK CITY—The Standard Steel Sections, Inc., is having plans prepared for the erection of an extension, 50 x 200 feet at an estimated cost of $10,000.

OGDENSBURG, N. Y.—A $150,000 plant is being contemplated by the North Country Ship Building Corp. E. J. Burns is in charge of preliminary plans.

OSWEGO, N. Y.—The Hessler Co. will rebuild its plant here to cost $40,000.

OSWEGO, N. Y.—P. Raby, 23 West Cayuga street, will build a 1-story foundry for G. J. Hensler, to cost $50,000.

ROCHESTER, N. Y.—The Palmer Marsey Co. will build a $15,000 woodworking plant here.

ROCHESTER, N. Y.—The Rochester Box & Lumber Co. has let the contract to Seitz & Laging, for a planing mill to cost $30,000.

ROCHESTER, N. Y.—The O. R. Adams Mfg. Co., 159 St. Paul street, is building an addition to its plant.

TONAWANDA, N. Y.—The John W. Cowper Co., Buffalo, has been awarded a contract for building several additions at the plant of the Pierce-Arrow Motor Car Co. The work includes two testing buildings, two reassembling buildings and a boiler house.

ALTOONA, PA.—The Pennsylvania railroad is having plans prepared by Chief Engineer A. C. Shand, Broad Street station, Philadelphia, for an addition to its electric power plant here.

BRIDGEVILLE, PA.—The Universal Rolling Mill Co. has bought six acres on which to erect an addition.

BROOKVILLE, PA.—The Sandy Hollow Coal Co. has been incorporated with a capital of $75,000, by John E. Geist, Ira J. Campbell, J. G. Sterner, J. B. Henderson, Brookville.

BRICKERVILLE, PA.—The Erie railroad is arranging to build an engine house and car shops here to cost $55,000.

CLAYTONIA, PA.—The Welborn Coal Co., capital $50,000, has been incorporated by Wallace W. Wekler, Pittsburgh; E. J. Kraeger, Avalon; William P. Welker, Ben Avon Heights.

CONNEAUTVILLE, PA.—The Burke Electric Co., Erie, Pa., has bought 25 acres on the Bessemer railroad near here and will build a modern plant.

EMPORIUM, PA.—The U. S. government proposes to build a sulphuric acid plant here to cost $2,000,000. Address chairman of war industries board, Washington, D. C.

EMPORIUM, PA.—The Pennsylvania railroad has let a contract for the erection of an engine house and shop facilities here, to cost $100,000, to Roydhouse, Arey & Co., 112 North Broad street, Philadelphia.

ERIE, PA.—The Triangle Tool Co. is building an addition to its factory.

ERIE, PA.—The Modern Tool Co. is arranging to build a $10,000 addition.

ERIE, PA.—The Brown Folding Machine Co. has arranged to build a factory, 100 x 140 feet, at Eighteenth street and American avenue.

ERIE, PA.—The Lackawanna Bridge Co. has let the contract to F. C. Kirkpatrick, Titusville, Pa., for two shipbuilding plants 60 x 100 and 60 x 80 feet.

FRANKLIN, PA.—The Chicago Pneumatic Tool Co. will build an addition 50 x 150 feet to its plant here.

JOHNSTOWN, PA.—The Ideal Coal Co. proposes to increase the capacity of its Sunnyside plant near here.

LEETSDALE, PA.—The Riter-Conley Co. has awarded a contract for the erection of a 1-story rivet and bolt shop and office building.

MEADVILLE, PA.—The Meadville Ice Mfg. Co. has let the contract to Charles R. Hall, Philadelphia, for the erection of an ice storage plant here.

MILTON, PA.—The Milton Mfg. Co. has arranged to build a power plant 50 x 80 x 100 feet to cost $100,000.

MILTON, PA.—The government proposes to build a $250,000 power plant here. R. C. Marshall is manager of the construction division of U. S. Army, Washington, D. C.

MOUNT UNION, PA.—The war industries board, Washington, proposes to build a $1,000,000 sulphuric acid plant here.

NEW CASTLE, PA.—The Standard Steel Car Co. has let the contract to the Hughes-Foulkrod Co., Pittsburgh, for a plant 509 feet long.

NORRISTOWN, PA.—The Rainey-Wood Coke Co. will erect a coke plant with capacity of 1200 tons daily on the Schuylkill river.

NORTHEAST, PA.—The Eureka Co. has arranged to build three additions.

NOXEN, PA.—James K. Mosser, of this city, has let the contract for the erection of a new tannery.

PHILADELPHIA—The ordnance department has awarded a contract for the erection of a 1-story tool hardening shop at the Frankfort arsenal.

PHILADELPHIA—Connery & Co., boiler and tank manufacturers, have had plans prepared for the erection of a 1-story, 75 x 180-foot addition to their machine shop.

PHILADELPHIA—The Tacony Ordnance Co. has awarded a contract for a $25,000 machine shop addition to the F. W. Mark Construction Co. The proposed addition will be one story, 72 x 125 feet.

PITTSBURGH—The Pittsburgh Crane & Engineering

Business Changes of Recent Date

TO obtain better displaying and storing facilities, O. T. Webb, Milwaukee, dealer in new and used machine tools and shop equipment, has removed his offices and headquarters from 25 Mack block to a new building at 224 Fourth street.

* * *

The Waukegan Machine Tool Co., Racine, Wis., is the new name of the Gorton Fence Co., manufacturer of patented wire fencing and gates.

* * *

The Square Turn Tractor Co., has removed its executive offices from 14 East Jackson boulevard, Chicago, to Norfolk, Neb., where the factory and sales offices already are located.

* * *

P. Pettler & Son, Beaver Falls, Pa., dealers in new and used machinery, have opened an office in Pittsburgh, in the First National bank building.

* * *

The Merchant Shipbuilding Corp., agent for the United States shipping board, has moved its general offices from the Finance building, Philadelphia, to Harriman, Pa.

* * *

The Meridian Machine Products Co., Detroit, has moved into a 4-story plant at No. 84 Jefferson avenue.

* * *

The Carlin Steel Products Co., Commercial Trust building, Philadelphia, has concluded arrangements whereby it will represent the Neely Nut & Bolt Co., Pittsburgh, in the Philadelphia district.

* * *

Frederick Cowin & Co., Inc., Chicago, manufacturers of bar iron, have moved their offices from the Drovers Bank building, to 76 West Monroe street, room 540.

* * *

The Stanley Spring & Equipment Co., Chicago, has changed its name to the Commerce Steel Products Co.

* * *

The Universal Machine Co., is successor to the Urschel Drop Forge Co., Bowling Green, O., manufacturer of drop forgings.

* * *

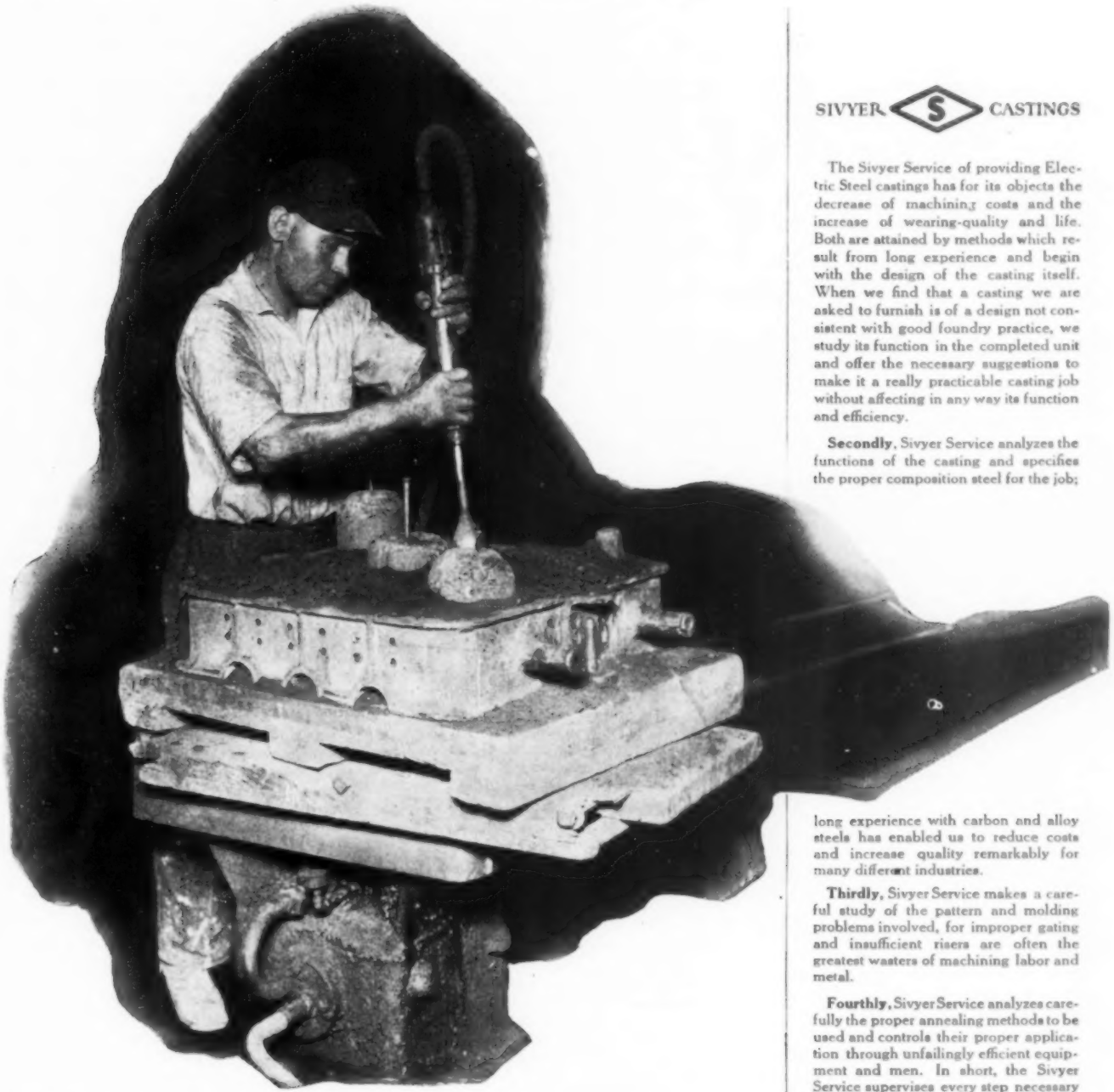
The Products Distributing Co., Dixon, Ill., has changed its name to the Streator Produce Co.

* * *

The Stanley Spring & Equipment Co., Chicago, has changed its name to the Commerce Steel Products Co.

* * *

The Suburban Power Co., LaSalle, N. Y., subsidiary of the Niagara Falls Power Co., Niagara Falls, has changed its name to LaSalle Electric Corp.



EVEN the brawniest molder's arm is stronger in the morning than in the afternoon. In the morning, therefore, he may tamp the sand down too firmly; and in the afternoon, not firmly enough. Such variations seriously affect machining costs. If the sand is too soft, the metal will swell and the castings will not fit the jigs made for them. If it is too hard, the gases can not escape properly and machining will show up small but troublesome pin-holes. In the production of Sivyer Castings, molding machines and pneumatic tampers are used; they assure molding uniformity and assist in insuring unfailingly the low machining costs which have been so important a factor in winning for Sivyer Castings a national market.

SIVYER (S) CASTINGS

The Sivyer Service of providing Electric Steel castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly, Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly, Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly, Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Co. has let the contract for a machine shop, 50 x 100 feet.

PITTSBURGH—The Pittsburgh Mining Machinery Co. is planning to build a machine shop shortly.

PITTSBURGH—The Marshall Foundry Co., First National bank building, is in the market for new machinery.

PITTSBURGH—The Pittsburgh Crane & Equipment Co. is building a 2-story machine shop, to cost $20,000.

PITTSBURGH—The Colonial Supply Co. has bought 12,000 square feet of land at Preble avenue and Locust street as site for a warehouse.

PITTSBURGH—A government permit has been granted the National Tube Co. for the erection at Ellwood City of a hotel and 100 dwellings.

PITTSBURGH—The Bostaph Coal Co. has been incorporated with a capital of $5000 by Luster A. Corbin, Adam W. Tritsch, James G. Armstron, Pittsburgh.

PITTSBURGH—The government has let a contract to the Faribault Building Corp. for the erection of a building to be known as Liberty loan headquarters, in Washington, to cost about $353,342.

PITTSBURGH—The Union Hardware & Woodenware Co., capital $75,000, has been incorporated by H. H. Marcus, H. D. Segal, David H. Adler, S. Zeidman, Morris Aronson, Pittsburgh.

PITTSBURGH—The Thompson-Starrett Co. is building another home community at Harmarville for the Consumers' Mining Co. and La Belle Iron Works, and has let sub-contracts for 155 houses.

PITTSBURGH—The Armstrong Coal Co., capital $100,000, has been incorporated by H. M. Silman, H. I. Silman, James H. Thompson, Ft. Marys; R. R. Beveridge, Ridgway; Simon Berger, J. Landy, New York; Louis Barach, Pittsburgh.

PUNXSUTAWNEY, PA.—The borough has passed a bond issue for waterworks for the Johnsonburg Water Co.

SHARPSBURG, PA.—The Sharpsburg Boiler Works has let the contract for an addition, 70 x 110 feet.

SPRINGDALE, PA.—The West Penn Power Co. has let the contract for a power plant here.

WOODLAWN, PA.—H. R. Zimmerman has started work on a warehouse here.

WRIGHTSVILLE, PA.—The Wrightsville Hardware Co. is extending its plant by an addition 50 x 100 feet for a foundry.

YODER, PA.—The Baltimore & Ohio railroad has let the contract for an engine coaling plant here.

YORK, PA.—The York Safe & Lock Co. will build a 2-story, 60 x 100-foot foundry, and a 1-story, 90 x 200-foot pattern shop.

BAYONNE, N. J.—The Y. M. C. A. shortly will advertise for bids for the erection of a 3-story building, 81 x 190 feet, to cost $250,000.

BLENHEIM, N. J.—H. Reed, 159 South Fifth street, Philadelphia, is contemplating the erection of a 2-story, 75 x 150-foot machine shop.

BLENHEIM, N. J.—Preliminary bids are being received by Horace Reed, Philadelphia, on a machine shop and office building, one and two stories, 75 x 150 feet. H. L. Shay, Philadelphia, is architect.

BLOOMFIELD, N. J.—The Sprague Electric Co., 527 West Thirty-fourth street, New York, will build a 1-story, 75 x 110-foot addition to its plant.

BLOOMFIELD, N. J.—The contract for a $17,000 warehouse, one story, 100 x 200 feet, has been awarded by the International Arms & Fuse Co. to the Truscon Steel Co., 110 West Fortieth street, New York City.

CAMDEN, N. J.—The Public Service Railway Co. has let a contract to the J. S. Rogers Co., Philadelphia, for the erection of a shop to cost $40,000.

CAMDEN, N. J.—The R. H. Beaumont Co., Philadelphia, has let a contract to the J. S. Rogers Co., Philadelphia, for the erection of a plant, 50 x 200 feet, to cost $25,000.

CAMDEN, N. J.—Armstrong & Latta, Philadelphia, have received the general contract from the New York Shipbuilding Corp. for constructing a $35,000 pump house.

JERSEY CITY, N. J.—The Continental Can Co., 111 West Washington street, Chicago, has acquired a site here and plans the erection of a three and 4-story plant.

NEWARK, N. J.—The Upson-Walton Co., Riverside avenue, will start work soon on the erection of a 2-story brick warehouse, 55 x 137 feet, to cost $50,000.

NEWARK, N. J.—The Diamond Tool & Mfg. Co. has been incorporated with $60,000 capital to manufacture dies, etc.

NEWARK, N. J.—Bids will be received shortly by the Art Metal Works on alterations and additions, costing $20,000. A structure three stories, 80 x 100 feet, is included in the proposed expansion.

NEW BRUNSWICK, N. J.—The board of freeholders will build a span bridge over the Delaware and Raritan canal. Alvin B. Fox is engineer.

PATERSON, N. J.—The Century National Chemical Co. has been incorporated with $100,000 capital by William J. Lickel and Franklin J. Keller, of New York, to manufacture chemicals.

RAHWAY, N. J.—The Philadelphia Quartz Co., chemical manufacturer, has purchased a 30-acre site here and will erect a brick and concrete factory.

WASHINGTON—The Victor Valve Mfg. Co., 1115 Fourteenth street, is in the market for foundry supplies, to include small brass castings, lathes, millers, grinders, drill presses and nickel plating equipment for light manufacturing.

Central States Activities

BELOIT, WIS.—The Beloit Iron Works has awarded contracts for the erection of a core-room and pattern shop addition of reinforced concrete and brick, 50 x 100 feet.

BELOIT, WIS.—The plant of the Rockton Molding Sand Co., Rockton, Ill., a suburb of Beloit, recently was damaged by fire with a loss estimated at $7500. The sand-milling equipment was practically destroyed. The owners expect to rebuild immediately.

EVANSVILLE, WIS.—The Porter Electric Line Co. has been incorporated with a capital of $5000 to construct and operate electric transmission lines in Rock county. J. K. Porter, F. F. Mitla and J. B. Porter, Evansville, are the incorporators.

GREEN BAY, WIS.—The Northwest Engineering Works has taken over the large 2-story garage and repair shop building of the Overland-Green Bay Co., and is making alterations and installing new equipment for a pattern shop, plumbing and pipe-fitting departments, etc.

HARTFORD, WIS.—The International Steel Products Co. will build a factory for the manufacture of gas engine silencers.

HAYWARD, WIS.—The American Veneer Co. has been organized with a capital stock of $100,000 by George C. Glover, of the Willow River Lumber Co., and plans to build and equip a plant for the manufacture of veneers, etc. Construction work is to begin at once. Machinery and equipment is being purchased.

MANITOWOC, WIS.—The Manitoowe Foundry & Machine Co., which recently was acquired by David Balkansky, has changed its name to the Manitowoc Foundry Co. and increased its capital to $50,000. The new owner is having plans prepared for extensive additions and alterations.

MARSHFIELD, WIS.—The Schroeder machine and blacksmith shop, 2 stories, has been purchased by Kuethe & Kuehl, machinists, who will modernize the building and equipment.

MILWAUKEE.—The Pressed Steel Tank Co., Greenfield avenue, is building a 80 x 175-foot addition.

MILWAUKEE.—The International Steel Products Co. will built a plant at Hartford, Wis., two stories, 68 x 125 feet, costing $35,000. Otto C. Unke, 1054 Third street, Milwaukee, is manager.

MILWAUKEE.—The DuPont Engineering Co., Wilmington, Del., has begun constructing a plant for the manufacture of explosives for the government on a 2200-acre tract at Ives, Racine county, Wis.

MILWAUKEE—The Milwaukee Brass Mfg. Co. is making alterations to its plant which will provide considerable new capacity in the casting and machining departments.

MILWAUKEE.—The General Heating & Ventilating Co., 196 Milwaukee street, has been awarded a government contract for work in connection with the erection of a cold storage plant to be established at Coddington, R. I.

MILWAUKEE.—The Galland-Hennig Mfg. Co., manufacturer of baling presses and hydraulic equipment, will build a machine shop addition, 60 x 150 feet, of brick, concrete and steel, with a crane runway at a cost of $25,000. C. L. Van Ess is general manager.

MILWAUKEE.—The Hubbard Steel Casting Co. has awarded the general contract for erection of a bay, 50 x 600 feet, and two wings, each 60 x 120 feet, to its main foundry at Michigan City, Ind., to the Northwestern Bridge & Iron Co., Milwaukee.

MILWAUKEE—The Milwaukee Boiler Co., 220 Oregon street, has the contract for fabricating and erecting a boiler and a 125-foot steel stack in the addition to the power plant of the Wisconsin Gun Co., Milwaukee.

MILWAUKEE—The B. Hoffman Mfg. Co., 267 Fifth street, has the contract for furnishing and installing piping required to connect a 2,500,000 gallon pumping unit with the municipal waterworks system at Manitowoc, Wis.

MILWAUKEE.—Articles of incorporation have been filed in behalf of the Northern Conveyor & Mfg. Co. The company will manufacture conveying systems and apparatus for handling coal, slag, rock and other materials. The capital is $5000 and the incorporators are J. P. Donnelly, H. C. Carter and J. M. Clarke.

MILWAUKEE—The National Brake & Electric Co., which is spending about $200,000 in enlargements and auxiliary buildings, has awarded following contracts for construction of a 100-ton annealing pit: Reinforced concrete work, Paul Riesen & Sons, Milwaukee; 75,000 fire brick, Ewens & Howard, St. Louis; oil burners. The unit will cost $25,000.

RACINE, WIS.—The Standard Foundry Co., Kewaunee street, will build a foundry, 80 x 160 feet, costing $50,000. E. B. Funston, 503 Robinson building, is architect.

RACINE, WIS.—A tract of 2,200 acres north of Racine, Wis., on Lake Michigan, has been acquired for the site for a plant by the DuPont Powder Co., Wilmington, Del.

RACINE, WIS.—The Racine Handle Co. has been organized with a capital of $10,000 to manufacture handles for mechanics' tools, brooms and mechanical appliances. Robert V. Steel, Ralph E. Pugh and Mort E. Walker are the incorporators.

SHEBOYGAN, WIS.—The Falls Motors Corp. will erect a factory addition, 60 x 230 feet, of brick, steel and concrete.

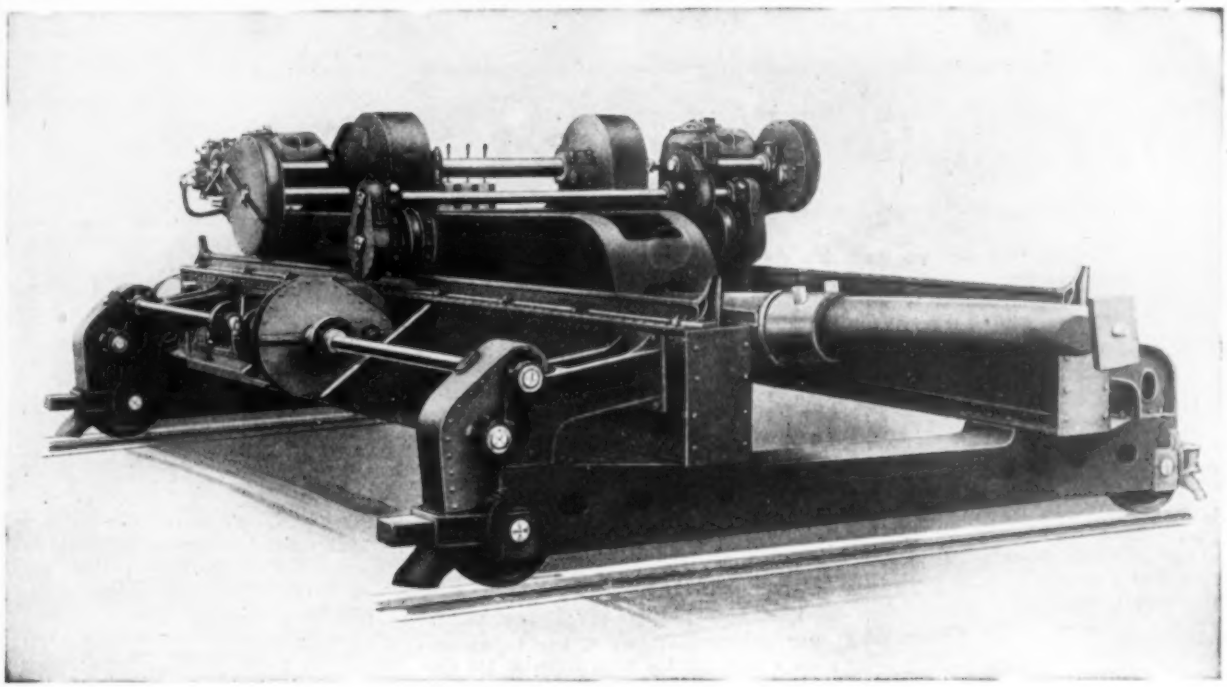
SHEBOYGAN, WIS.—The board of public works will ask bids soon on a steel bridge, 220 feet long with a 60-foot bascule span.

DETROIT—The Denby Motor Truck Co. contemplates the erection of a power house to cost $10,000.

DETROIT—The United Motors Corp. contemplates

W-S-M

STEEL PLANT EQUIPMENT
COKE OVEN MACHINERY
GAS PRODUCERS
ORE AND COAL HANDLING MACHINERY
SPECIAL CRANES
MINING MACHINERY
HYDRAULIC TURBINES



Charging Machines

The Wellman-Seaver-Morgan Company originated, first built, developed, and for many years was the sole constructor of mechanical chargers for open hearth furnaces.

The W-S-M Low Type Charger is pictured above. Some conditions indicate the use of the High Type Charger or the Crane Type.

We are prepared to build a special machine for your particular requirements.

Bulletin A 7, "W-S-M Charging Machines and Manipulators," will be sent on request.

THE WELLMAN-SEAVER-MORGAN CO.

CLEVELAND, OHIO, U.S.A.

the erection of a 3-story office building, of brick and steel.

DETROIT—The Packard Motor Car Co. is planning the erection of an addition to cost $30,000.

DETROIT—The Cummings-Moore Graphite Co. contemplates the erection of a factory, 1-story, 38 x 125 feet.

DETROIT—The Anderson Forge & Machine Co. is contemplating the erection of a 1-story office and shop building.

DETROIT—Plans are being completed for the erection of a 2-story addition to the plant of the Timken-Detroit Axle Co.

DETROIT—The Charles B. Bohn Foundry recently obtained a permit to construct a core room addition to its plant.

DETROIT—The Detroit Lubricator Co. has a permit to go ahead with the construction of a shipping building, 104 x 120 feet, to cost $25,000.

GRAND RAPIDS, MICH.—The Grand Rapids Brass Co. contemplates the erection of an addition to its plant.

CHICAGO.—The United States Ball Bearing Mfg. Co., 4535 Palmer street, has awarded a contract for the erection of a 1-story, 81 x 86-foot addition to its plant.

CHICAGO.—The Chicago Transfer & Clearing Co., 5601 West Sixty-third street, will build a car shop, 100 x 100 feet, to cost $25,000. S. N. Crowen, 30 North La Salle street, is architect.

ROCK ISLAND, ILL.—The Stuart Water Power Machine Co., capitalized at $75,000, has been chartered by William A. Stuart, George A. Parks and Robert W. Olmsted.

The Pacific Northwest

OLYMPIA, WASH.—A hydro-electric plant and two electric smelting furnaces are being installed at a manganese mine in the Olympic mountains by the Olympic Smelters, H. H. Piper, Olympia, manager.

SEATTLE.—The H. Koppers Co., Pittsburgh, has a permit to construct two toluol factories here at a cost of $120,000.

SEATTLE.—An appropriation of $65,000 from the water fund for the construction of a steel water reservoir in West Seattle has been authorized by the city council.

SEATTLE.—Architect Francis W. Grant, Mehlhorn building, has awarded Contractor J. H. Tolman, Haight building, a contract to erect a heavy-timbered foundry building, 70 x 120 feet, on Horton street, for the Aurora Foundry Co.

SEATTLE.—At a meeting of the city utilities committee, it was decided to ask counsel to draw an ordinance providing an additional bond issue of $1,750,000 to take care of all construction and extension work in the city lighting department for the next three years. Two substations will be erected.

SPOKANE—The Hallidie Co. is erecting additions to its plant and boiler house.

SPOKANE.—The fight for federal permission to continue the construction of the Pine Creek railroad is to be carried on despite the adverse ruling of the railroad administration.

BERKELEY, CAL.—The Hall-Scott Motor Co., Snyder and Fifth streets, will build a concrete machine shop, costing $40,000. E. T. Foulkes, Crocker building, San Francisco, is architect.

EUREKA, CAL.—The Marine Iron Works has been sold to the Hammond Lumber Co., San Francisco. The latter company is moving the entire equipment to its own shops across the bay to Samoa. The Hammond Co. will equip several ships for the Emergency Fleet corporation.

OAKLAND, CAL.—The American Engine Corp. plans to erect a plant covering seven acres and costing approximately a million dollars for the building of large type Diesel engines. Construction will start as soon as priorities for materials and machinery are received.

SAN FRANCISCO—The U. S. Shape and Pipe Bending Co. has completed a machine shop at 315 Howard street.

SAN FRANCISCO—Wallace H. Dow Co. has completed a 45 x 137 foot machine shop at 140 Howard street. General machine work and manufacture is to be undertaken.

SAN FRANCISCO—The Pacific Coast Boiler Works has just completed 84 tanks for Huff-type vessels. The company recently moved into its new concrete building at 235 Main street.

SAN FRANCISCO—The Pacific Foundry is erecting a new shop building. The main building will be of steel, 52 x 245 feet with a bay 20 x 245 feet. One 25-ton and one 30-ton handling crane have been installed. Three cupolas will be installed in the main building.

Business In Canada

ESQUIMALT, B. C.—The Canadian government is contemplating construction of a new drydock.

GRAVES POINT, B. C.—Construction work has been started on a by-products plant to cost $1,250,000, for the Granby Consolidated Mining, Smelting & Power Co., 718 Granville street, Vancouver, B. C.

VANCOUVER, B. C.—The Pacific Sheet Metal Works, Ltd., has been incorporated to manufacture metals, iron, steel, etc., with $50,000 capital stock.

VANCOUVER, B. C.—The Globe Motor Co., Ltd., has been incorporated to manufacture motors, machinery, etc., with $10,000 capital stock.

VANCOUVER, B. C.—The Columbia Iron & Steel Co., Ltd., has been incorporated to manufacture iron, steel, machinery, tools and all kinds of metals, etc., with $25,000 capital stock.

VANCOUVER, B. C.—The Hendry Foundry Co., 345 Dufferin street west, has awarded the contract to H. A. Wiles, 1361 Eighth avenue, for construction of a foundry to cost $57,000.

VICTORIA, B. C.—The shipyards recently operated by the Cameron-Genoa Mills Shipbuilders, Ltd., at Point Ellice, have been taken over by the Foundation Co.

HAMILTON, ONT.—The Acme Stamp & Stencil Works, 34 Sydney street, has started work on an addition to its plant.

LONDON, ONT.—The city council will construct a low-level intercepter and sewage pumping plant; also a sewage disposal works to cost $300,000. H. A. Brazier is engineer.

PEMBROKE, ONT.—The Pembroke Iron Works Co. has had plans prepared for the erection of a munition plant to cost $80,000. W. F. Sparling Co., 120 Bay street, Toronto, Ont., has been awarded the contract.

SPRUCEVILLE, ONT.—A. M. Baker is in the market for a lathe for turning peavey handles, etc.

TORONTO, ONT.—The Hydro Electric Power Commission, Sir Adam Beck chairman, has extended the time until Nov. 1, for tenders for four 52-500-horsepower turbines for the Chippawa-Queenston development.

TORONTO, ONT.—The British-American Steamship Co., Ltd., has been incorporated to build and operate ships, boats, shipbuilding plants, etc., with $3,000,000 capital, by George H. Sedgewick, Alexander Fasken, 36 Toronto street; Robert S. Robertson and others of Toronto.

EYEBROW, SASK.—Carlyle & Secley propose to build an electric light plant.

MOOSE JAW, SASK.—Plans are being prepared for an addition to the waterworks plant, to cost $110,000. George D. Mackie is engineer.

CALGARY, ALTA.—The Alberta Flour Mills, Ltd., has started work on a new 6000 barrel flour mill, to be 105 x 572 feet.

PINDER, N. B.—George Pinder is making preparations for the erection of a flour mill, to cost $40,000.

SYDNEY, N. S.—Chappell Brothers & Co., Brookland street, has the general contract for the erection of a 1-story brick engine house for the Dominion Iron & Steel Co., to cost $80,000.

CAP DE LA MADELEINE, QUE.—The Tidewater Shipbuilders, Ltd., have let the contract for a foundry and machine shop, to cost $100,000.

LEVIS, QUE.—The Levis Foundry Co., Commercial street, has started work on an addition to its plant to cost $12,000. The contractors are Therrien & Guay, Fraser street.

MONTREAL, QUE.—The Canadian Car & Foundry Co. has let the general contract for a 1-story brick addition to its plant, to cost $100,000.

MONTREAL, QUE.—Lamontagne, Ltd., 338 Notre Dame street, has started work on a new plant, to cost $45,000.

MONTREAL, QUE.—Good progress is being made on the addition which is being built to the plant of the Montreal Locomotive Works, at a cost of $35,000.

MONTREAL, QUE.—The Canadian Pneumatic Tool Co., subsidiary of the Chicago Pneumatic Tool Co., has decided to build a plant here.

MONTREAL—The contract for the erection of a garage to cost $132,000, for the city council, has been awarded to John Quinlan & Co., 1165 Greene avenue.

MONTREAL, QUE.—The sash and door factory owned by Traversy, Ltd., was damaged by fire with a loss of $100,000. The company will rebuild and will require machinery and equipment for the new plant.

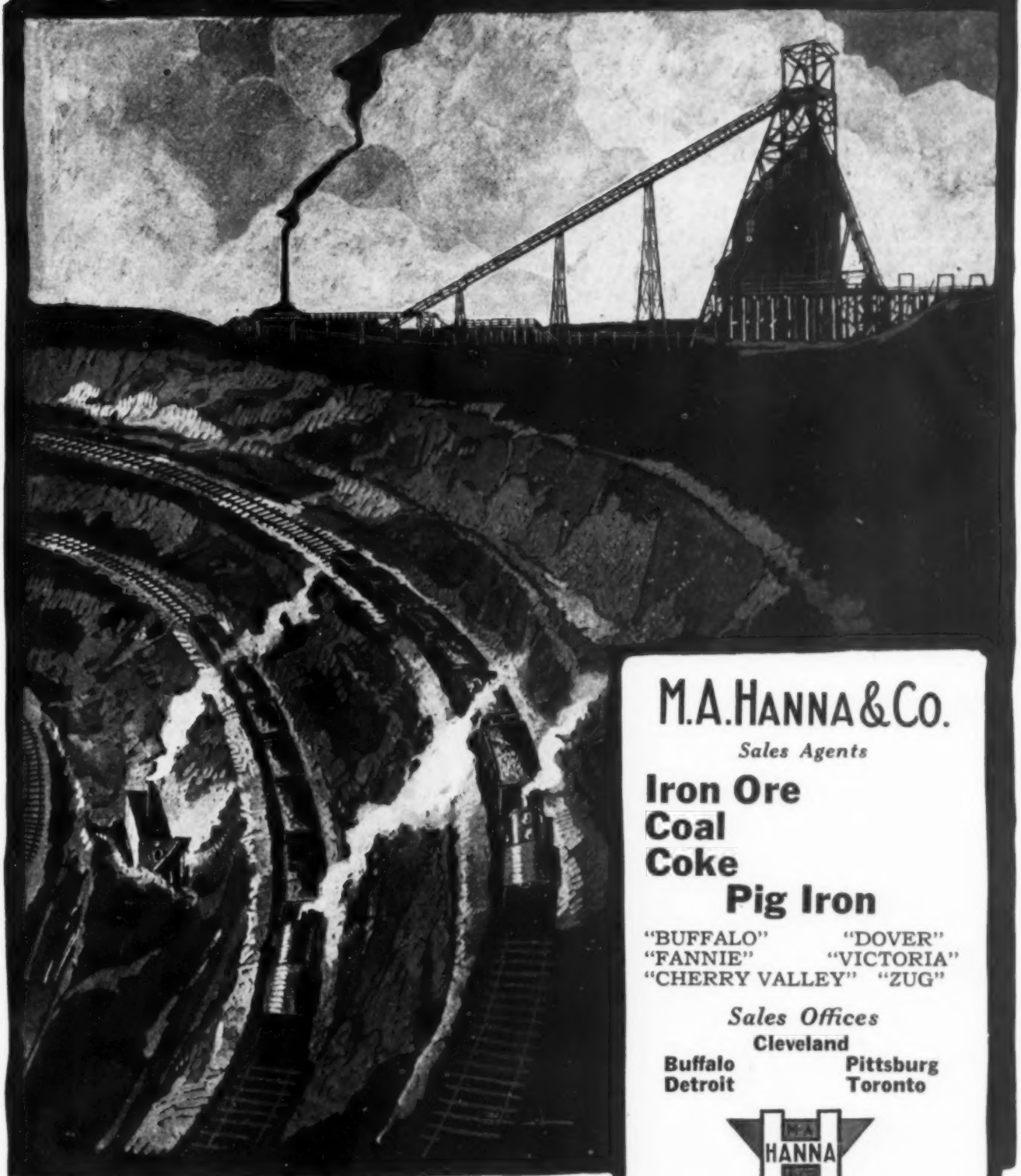
MONTREAL, QUE.—The Kerosene Equipment Co., Ltd., has been incorporated to manufacture machinery, implements, containers, pumps, etc., with $49,000 capital stock; by Adelard Lapierre, Osias Theoret and others, of Montreal.

MONTREAL, QUE.—The Canadian Plant Equipment Co., Ltd., has been incorporated to manufacture machinery, plant, tools, equipment, etc., with $100,000 capital stock; by Waldo W. Skinner, George G. Hyde, John G. Ahern and others of Montreal.

THREE RIVERS, QUE.—The Three Rivers Shipyards, Ltd., have started work on a 2-story frame addition, to cost $200,000.

THREE RIVERS, QUE.—The Canada Steamship Co., Ltd., 9 Victoria square, Montreal, Que., has started work on a machine shop, to cost $50,000. The general contractors are Anglins, Ltd., 65 Victoria street, Montreal.

HANNA



M. A. HANNA & CO.

Sales Agents

Iron Ore
Coal
Coke
Pig Iron

"BUFFALO" "DOVER"
"FANNIE" "VICTORIA"
"CHERRY VALLEY" "ZUG"

Sales Offices

Cleveland
Buffalo **Pittsburg**
Detroit **Toronto**

M.A. HANNA

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports	
Old range Bessemer, 55 iron	$6.65
Mesabi Bessemer, 55 iron	6.40
Old range non-Bess., 51½ iron	5.90
Mesabi non-Bess., 51½ iron	5.75

WAREHOUSE PRICES

Steel bars, Chicago	4.17c
Steel bars, Cleveland	4.07c
Steel bars, Detroit	4.13c
Steel bars, Philadelphia	4.13c
Steel bars, New York	4.145c
Steel bars, St. Louis	4.24c
Steel bars, Cincinnati	4.13c
Steel bars, St. Paul	4.395c
Steel bars, Buffalo	4.10c
Iron bars, Buffalo	4.70c
Iron bars, Chicago	4.77c
Iron bars, Cleveland	4.67c
Iron bars, Detroit	4.75c
Iron bars, St. Louis	4.84c
Iron bars, Cincinnati	4.13c
Iron bars, Philadelphia	4.73c
Iron bars, New York	4.745c
Shapes, Chicago	4.27c
Shapes, Detroit	4.23c
Shapes, St. Louis	4.34c
Shapes, St. Paul	4.495c
Shapes, New York	4.245c
Shapes, Cleveland	4.17c
Shapes, Philadelphia	4.23c
Shapes, Buffalo	4.20c
Shapes, Cincinnati	4.23c
Plates, Buffalo	4.45c
Plates, Chicago	4.52c
Plates, Detroit	4.48c
Plates, St. Louis	4.59c
Plates, St. Paul	4.745c
Plates, New York	4.495c
Plates, Cleveland	4.42c
Plates, Philadelphia	4.48c
Plates, Cincinnati	4.48c
No. 10 blue anl. sheets, Chicago	5.52c
No. 10 blue anl. sheets, Cleveland	5.42c
No. 10 blue anl., Buffalo	5.45c
No. 10 blue anl. sheets, St. L.	5.59c
No. 10 blue anl. sheets, Cincinnati	5.48c
No. 10 blue anl. sheets, St. Paul	5.745c
No. 10 blue anl. sheets, Detroit	5.48c
No. 28 black sheets, Chicago	6.52c
No. 28 black sheets, Cleveland	6.42c
No. 28 black sheets, Cincinnati	6.48c
No. 28 b'ack, Detroit	6.48c
No. 28 black sheets, St. L.	6.59c
No. 28 black sheets, St. Paul	6.745c
No. 28 galv. sheets, Chicago	7.77c
No. 28 galv. sheets, Cleveland	7.67c
No. 28 galv. sheets, Cincinnati	7.73c
No. 28 galvanized, Detroit	7.73c
No. 28 galv. sheets, St. L.	7.84c
No. 28 galv. sheets, Buffalo	7.70c

IRON AND STEEL SCRAP

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$25.50 to 26.00
Bundled sheets, Pittsburgh	28.00 to 29.00
Bundled sheets, Cleveland	26.00 to 27.00
Bundled sheets, Buffalo	25.00 to 26.00
Boiler plate, cut, No. 1, Chicago	28.00 to 28.50
Boiler plate, cut, No. 1, St. Louis	26.50 to 27.00
Frogs, switches, guards, St. Louis	28.50 to 29.00
Frogs, switches, guards, Chicago	29.00
Heavy melting steel, Pittsburgh	29.00
Heavy melting steel, Buffalo	30.00
Heavy melting steel, Chicago	29.00
Heavy melting steel, Cleveland	29.00
Heavy melting steel, Cincinnati	28.50 to 29.00
Heavy melting steel, east. Pa.	28.00 to 29.00
Heavy melting steel, N. Y.	26.00
Heavy melting steel, St. L.	28.50 to 29.00
Heavy melting steel, Birmingham	27.00 to 28.00
Baled sheets, Cleveland	28.50 to 29.00
Baled sheets, Pittsburgh	28.00 to 29.00
Baled sheets, Chicago	29.00
Knuckles, couplers, Chicago	34.00
Knuckles, couplers, St. Louis	33.00 to 33.50
Low phos. steel, Buffalo	37.50
Low phos. steel, Pittsburgh	39.00
Low phos. crops, eastern Pa.	39.00
Low phos. guaranteed E. Pa.	36.50
Shoveling steel, Chicago	29.00
Shoveling steel, St. Louis	28.00 to 28.50
Steel rails, short, Chicago	34.00
Steel rails, short, Cleveland	34.00
Steel rails, short, St. Louis	32.50 to 33.00
Steel rails, old, Birmingham	29.00 to 30.00
Stove plate, Chicago	29.00
Stove plate, Cincinnati	23.50 to 24.00
Stove plate, St. Louis	25.50 to 26.00
Stove plate, N. J. points	27.25
Stove plate, Birmingham	25.00 to 26.00
Stove plate, Buffalo	28.50 to 29.00
Stove plate, eastern Pa.	29.00
Stove plate, Cleveland	25.00 to 25.50
Stove plate, Pittsburgh	29.00

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.40
Boston	4.60
Philadelphia	4.10
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	6.10
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.75
Cincinnati	1.75
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	24.5 cents
Philadelphia	23.0 cents
Boston	27.0 cents
Buffalo	21.5 cents
Baltimore	22.5 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

IRON MILL USE

Busheling, No. 1, Cleveland	30.50 to 31.00
Busheling, No. 1, Buffalo	29.00 to 30.00
Busheling, No. 1, Pittsburgh	30.00 to 30.50
Busheling, No. 1, Cincinnati	27.00 to 27.50
Busheling, No. 1, Chicago	30.50 to 31.00
Busheling, No. 2 Chgo.	21.50 to 22.50
Busheling, No. 1, St. Louis	29.00 to 29.50
Cast borings, New York	16.75 to 16.90
Cast borings, eastern Pa.	19.00
Cast borings, Buffalo	18.00 to 19.00
Cast borings, Cleveland	19.00
Cast borings, Cincinnati	17.00 to 18.00
Cast borings, Pittsburgh	19.00
Cast borings, Birmingham	17.00 to 19.00
Cast borings, Chicago	18.00 to 19.00
Cast borings, St. Louis	18.50 to 19.00
City wrought, long, N. Y.	30.00
Cut forge, Chicago	32.50 to 33.00
Forge No. 1, eastern Pa.	28.00 to 29.00
Grate bars, Buffalo	27.50 to 28.00
Grate bars, Cleveland	25.50 to 26.00
Grate bars, N. J. points	27.25
Iron axles, Pittsburgh	46.50
Iron axles, Cincinnati	43.50 to 44.00
Iron axles, Cleveland	46.50
Iron axles, Chicago	46.50
Iron axles, eastern Pa.	46.50
Iron axles, St. Louis	46.00 to 46.50
Iron axles, Buffalo	45.00 to 47.00
Iron rails, Chicago	39.00
Iron rails, Buffalo	36.00 to 37.00
Iron rails, Cincinnati	34.50 to 35.00
Iron rails, St. Louis	38.50 to 39.00
Iron rails, Cleveland	37.00 to 38.00
Machine turnings, Cincinnati	18.00 to 18.50
Machine turnings, Cleveland	19.00
Machine turnings, Buffalo	18.00 to 18.50
Machine turnings, N. Y.	16.75 to 16.90
Machine turnings, Pittsburgh	18.00 to 19.00
Machine turnings, east. Pa.	19.00
Machine turnings, Birmingham	16.00 to 17.50
Machine turnings, Chicago	18.00 to 19.00
Machine shop turnings, St. Louis	18.50 to 19.00
Pipes and flues, Cleveland	28.00 to 29.00
Pipes and flues, Chicago	29.00
Pipes and flues, St. Louis	27.50 to 28.00
R. R. mach. cast, No. 1, Buffalo	34.00
R. R. wrgt. No. 1, Buffalo	34.00
R. R. wrgt. No. 1, east Pa.	34.00
Railroad wrgt. No. 1, Cincinnati	33.50 to 34.00
Railroad wrgt., No. 1, Cleveland	34.00
R. R. wrought, No. 1, Pittsburgh	34.00
Railroad wrgt., No. 2, Chicago	32.50 to 33.00
Railroad wrought, No. 1, Chicago	33.50 to 34.00
R. R. wrought, No. 1, Birmingham	31.00 to 34.00
No. 1 yard wrought, Eastern Pa.	33.00
No. 1 bushelings wrgt., East. Pa.	31.00
Sheet wrought, Pittsburgh	34.00
Railroad wrgt., No. 1, St. Louis	33.00 to 33.50
Railroad wrought, No. 2	32.00 to 32.50
Wrought pipe, Buffalo	27.00 to 28.00
Wrought pipe, East. Pa.	33.00
Wrought pipe, ungraded, East. Pa.	29.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$24.00
Axle turnings, Buffalo	24.00
Heavy axle turnings, East. Pa.	24.00
Heaxy axle turnings, Pitts.	24.00
Shafting, New York	35.50
Shafting, East. Pa.	39.00
Steel car axles, Birmingham	38.00 to 40.00
Steel car axles, Pittsburgh	46.50
Steel car axles, New York	43.00
Steel car axles, Buffalo	44.00 to 46.00
Steel car axles, Cleveland	44.00
Steel car axles, East. Pa.	46.50
Steel car axles, Chicago	46.50
Shafting, St. Louis	38.00 to 39.00
Steel car axles, St. Louis	46.00 to 46.50

IRON FOUNDRY USE

Car wheels (iron), Pittsburgh	$29.00
Car wheels (steel), Pittsburgh	34.00 to 35.00
Car wheels, East. Pa.	29.00
Car wheels, Buffalo	29.00
Car wheels, Chicago	29.00
Car wheels, St. Louis	28.50 to 29.00
Car wheels, Birmingham	29.00 to 30.00
Car wheels, Cleveland	30.00
Tram car wheels, Birmingham	27.00 to 29.00
Cast, No. 1, Birmingham	31.00 to 34.00
Cast No. 1, cupola, East. Pa.	34.00
Cast, No. 1, Cleveland	33.00 to 34.00
Cast, No. 1, Cincinnati	33.00 to 34.00
Cast, 1, heavy, New York	32.25 to 32.50
Cast, 1, machy., New York	32.25 to 32.50
Cast, No. 1, Chicago	34.00
Cast, No. 1, Pittsburgh	32.50 to 33.00
Cast, No. 1, St. Louis	32.00 to 32.50
Malleable, Cincinnati	30.00 to 34.00
Malleable, Cleveland	30.00 to 34.00
Malleable, Buffalo	29.00 to 34.00
Malleable, Pittsburgh	33.00 to 34.00
Malleable, East. Pa.	29.00
Malleable, cupola, East. Pa.	33.00
Malleable, railroad, Chicago	34.00
Malleable, agricultural, Chicago	33.00 to 33.25
Malleable, railroad, St. Louis	31.25 to 31.75
Malleable, agricultural, St. Louis	29.50 to 30.00

MISCELLANEOUS USES

Boiler punchings, Chicago	36.00 to 36.50
Reroll. rails, 5 ft. and over, Pitts.	34.00
Reroll. rails, 5 ft. and over, Chi.	34.00
Reroll. rails, 5 ft. and over, E. Pa.	34.00
Reroll. rails, 5 ft. and over, St. L.	33.50 to 34.00
Reroll. rails, 5 ft. or over, Cleve.	34.00
Rerolling rails, long, Birmingham	37.50 to 38.50
Locomotive tires, Chicago	45.50 to 46.50
Locomotive tires, St. Louis	42.50 to 43.00